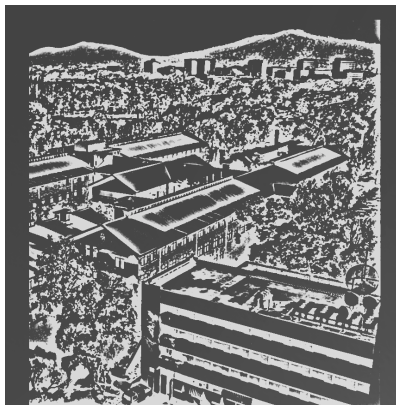


Interactions Across the University



The School assumes an active role in many areas across campus. For example, School staff contribute to the Centre for the Science and Engineering of Materials, the Quaternary Dating Research Centre and the Visual Sciences Research Centre. Details of the associated collaborations with other Schools, including RSBS, RSC, RSES and JCSMR, are found in Research Accomplishments (section 1) and Collaborative Ventures (section 3).

In this section we emphasise specifically the relationship with The Faculties, with whom the School has traditionally enjoyed a high level of interaction. This is particularly so for the Departments of Physics and Chemistry in the Faculty of Science, and the Faculty of Engineering and Information Technology. These interactions are reinforced by a number of joint staff appointments.

This year, School staff delivered 26 undergraduate courses in The Faculties and assumed responsibility for supervision and co-supervision of a number of honours and graduate students. These activities, together with details of research collaborations with Faculty staff (see also section 3 of the report) are reported below. The final part of this section lists contributions that School staff make to the routine functioning and management of the University.

The School, in collaboration with the Departments of Physics and Engineering and the Research School of Information Science and Engineering and a number of local and interstate photonics companies, presented a business plan to the university for the new science and engineering degrees in photonics to be inaugurated in 2002. The bid was successful in winning \$300,000 from the Vice-Chancellors "Funds for Growth" and a further \$700,000 in loans from the ANU Development Bank.



Interaction with The Faculties

There is a high level of interaction between the School and The Faculties, particularly with the Department of Physics and Department of Chemistry in the Faculty of Science and also with The Faculty of Engineering and Information Technology.

A number of collaborative research projects are carried out. RSPHysSE staff teach and assume responsibility for supervision and co-supervision of some honours and graduate students enrolled in The Faculties. Additional interaction is facilitated by staff who hold joint appointments.

Applied Mathematics

Dr V.S.J. Craig lectured and supervised the lab course *Applied Physical Chemistry* C102 (14 lectures and 9 labs) for a 3rd year undergraduate unit in the Department of Chemistry.

Dr T.J. Senden was Advisor to Mario de Ramos, a MSc student from Department of Forestry, and to Tony Flynn, a PhD student from Faculty of Engineering. He co-supervised Ray Roberts, a PhD student from Department of Forestry.

Dr D.R.M. Williams taught the *Statistical Physics/Soft Matter* course (3rd year) in the Department of Physics.

Atomic and Molecular Physics Laboratories

Collaboration on *Atom Optics* continues between the Atom Manipulation Project in the School and the Physics Department in the Faculties, involving Dr M.D. Hoogerland, Professor S.J. Buckman and Dr K.G.H. Baldwin (LPC), with Professor H.-A. Bachor, Dr J. Close and Dr C. Savage (Physics, The Faculties).

Dr M.D. Hoogerland presented an Honours year course in *Atom Optics* in the Physics Department, the Faculties, and co-supervised N. Sih, D. Tierney and R. Heck, 4th year honours students from the Engineering Department, on the *Atom Manipulation Project*.

Dr A.S. Kheifets (joint position with TP) gave a lecture course on *Atomic Collision Processes* which was delivered to Honours students in the Department of Physics in March-May.

Electronic Materials Engineering

Dr Y. Chen gave lectures to 4th year students in the Department of Engineering on *Nanotube Materials*. He also lectured on *X-ray Diffraction Analysis* as part of the Unit of *Materials Characterisation*, including laboratory tutoring.

Dr R.G. Elliman lectured to ANU Engineering ENGN4507 students on *Semiconductor Technology* and to ANU Engineering ENGN4517 on *Materials Characterisation*.

Dr R.G. Elliman, Dr M.C. Ridgway and Professor C. Jagadish, participated in teaching the *Microelectronic Processing* Elective Course in the Department of Engineering.

Professor C. Jagadish supervised three Honours students.

Dr M.C. Ridgway presented a general lecture on *Ion-beam Analysis* in the CSEM lecture series and supervised one Honours student.

Dr H.H. Tan supervised one Engineering Honours student (with Professor C. Jagadish).

Dr H. Timmers (joint position with Nuclear Physics) lectured on *Nuclear Physics and Reactions* and *Thermal Physics* to 2nd and 3rd year Physics students, Department of Physics and Theoretical Physics. He also supervised the research project of a 3rd year exchange student.

Professor J.S. Williams supervised one Honours student.

Laser Physics Centre

Collaboration on *Atom Optics* continues between the Atom Manipulation Project in the School and the Physics Department in the Faculties involving Dr K.G.H. Baldwin; Dr M.D. Hoogerland and Professor S.J. Buckman (AMPL) with Professor H.A. Bachor, Dr J. Close and Dr C. Savage (Faculties).

Collaboration with Dr M.G. Humphrey of the Chemistry Department, Faculty of Science, continues on *Nonlinear Optical Properties or Organometallics*. The Chemistry Department has also generously made its facilities available to support work on synthesis of second order nonlinear optical chromophores by LPC staff.

Dr K.G.H. Baldwin presented a short course in *Lasers in Semiconductor Technology* to 3rd year Engineering students. He co-supervised N. Sih, D. Tierney and R. Heck, 4th year Honours students from the Engineering Department, on the Atom Manipulation Project.

Nuclear Physics

Dr A.M. Baxter of the Department of Physics and Theoretical Physics carries out research on nuclear spectroscopy in the Department of Nuclear Physics.

Dr A.P. Byrne holds a joint appointment with the Department of Physics and Theoretical Physics.

Professor G.D. Dracoulis co-supervised (with Dr Allan Baxter) Ms Aska Dolinska, a student in the Distinguished Scholars Program of the Department of Physics, as she participated in the research program of the nuclear spectroscopy group of the Nuclear Physics Department.

Dr T. Esat from the Department of Geology carries out research on the calibration of the radiocarbon time scale 30-40 ka BP in the Nuclear Physics Department.

Dr L.K. Fifield continues collaborations with Dr P. De Deckker and Dr B. Opdyke, Department of Geology, on *Establishing Chronologies for Marine Cores via Radiocarbon Dating of Foraminifera* and Dr T. Esat, Department of Geology, on *Radiocarbon Measurements on Corals from the Huon Peninsula, Papua New Guinea*.

Dr N. Lobanov supervised honours student, J.M. Donnelly (Department of Engineering) for his thesis *The Finite Element Analysis and Optimizations of Superconducting Cavity Resonators*.

Dr A.E. Stuchbery lectured Physics 3rd year, Department of Physics on *Elementary Particle Physics*.

Professor R. Taylor gave a course on *Planetary Science* (Geol., 3050) at the Department of Geology in the Spring Term.

Dr H. Timmers who holds a joint appointment with Department of Physics and Theoretical Physics and EME, lectured 3rd year *Nuclear Physics* (jointly with Aidan Byrne) and 2nd year *Thermodynamics* in the Department of Physics. He also supervised Ms Tanja Schuck, a 3rd year exchange student during a one-year experimental project entitled: *Evidence of the Importance of Neutron Transfer in the Fusion of $^{34}\text{S} + ^{197}\text{Au}$, ^{208}Pb from Measurements of Quasi-elastic Scattering*.

Optical Sciences Centre

Professor N. Akhmediev gave a course on *Field Theory* to graduates.

Professor Y. Kivshar supervised Mr Ben Cusak, Honours student.

Professor Love and Dr Ankiewicz presented the unit ENGN4513/PHYS3018 "Optical Communications" during second semester to 35 engineering and physics students in the Faculties.

Plasma Research Laboratory

Professor R.W. Boswell participated in the FEIT *Micro-Electronics* course and is supervising three Engineering projects.

Dr J. Howard presented an eighteen-lecture course on *Plasma Physics* to 3rd year students, Department of Physics.

Professor J.H. Harris, Dr B.D. Blackwell and Dr K. Walshe developed and presented a new 18 lecture and laboratory course in *Power Electronics And Application* (ENGN4506) for 4th year Engineering students in the Faculty of Engineering and Information Technology.

Dr G.G. Borg presented a 6 weeks lecture course on *Radiofrequency Techniques for Wireless Communications* to students in the Faculty of Engineering and Information Technology.

Theoretical Physics

Dr R. Ball gave a lecture titled *Nonlinear Dissipative Dynamical Systems: Qualitative Analysis* to 3rd year Classical Mechanics students in the Physics, Faculty. She also assisted with tutoring and marking in the course.

Dr M.P. Das gave a course of 12 lectures on *Advanced Kinetic Theory* at the Undergraduate Faculty. He also supervised Mr Phillip Brydon (2nd year BSc) in the Distinguished Scholar Mentoring Program

Professor R.L. Dewar taught *Classical Mechanics*, 11 lectures, (C01/PHYS 3001) in the Department of Physics (1st semester).

Dr H. Gardner lectured for ENGN4518 *Computational Engineering*.

Dr A.S. Kheifets (joint position with AMPL) gave a course on *Atomic Collision Processes* to Honours students in Physics, Faculties in March–May. He also supervised Mr Mohammed Arifin, an Indonesian government sponsored student. Mr Arifin submitted his M.Sc. thesis on *Calculation of Two-Electron Photoionization of Metastable Helium Using the Convergent Close-Coupling Method*.

Dr S. Kuyucak gave an Honours course on *Classical Electrodynamics*. He is also collaborating with Dr S.H. Chung from the Department of Chemistry on *Models of Membrane Ion Channels*.

Dr M. Walker has given tutorials in the Mathematics Department in both Semesters as well as for the *Maths for Economists* course in the Economics Department.

University and School Service

Membership of regular School committees is given in section 6

Applied Mathematics

Dr T.J. Senden

Member, Vice Chancellor's advisory committee for the Centre for the Science and Engineering of Materials

Member, Scanned Probe Microscopy Facility

Atomic and Molecular Physics Laboratories

Professor S.J. Buckman

Member, Board of Studies, Graduate Program in Physical Sciences

Dr B.R. Lewis

Member, Faculty, Research School of Astronomy and Astrophysics

Member, Promotions Committee, Research School of Astronomy and Astrophysics

Member, Library Committee (until March)

Member, University Committee of Information (from December)

Member, Scholarly Information Services Committee (from September)

Member, Science Library Advisory Committee

Member, Board of the Institute of Advanced Studies

Member, Committee on General Policy, Board of the Institute of Advanced Studies (from September)

Dr S.T. Gibson

Member, IT Local Contacts Committee

Mr K.J. Lonsdale

Member, ANU Council

Member, Staff Amenities Fund Committee

Member, Selection Committee, Council Medal for General Staff Excellence

Member, Committee to Advise Council on the Appointment of the Tenth Vice-Chancellor

Member, University Staff Consultative Committee

Panel Member, Committee of Review

Member, University Mediation Panel

Professor E. Weigold

Member, Board of the Institute of Advanced Studies

Member, Major National Research Facilities H-1 Board

Member, Advisory Board, Research School of Astronomy and Astrophysics

Member, Board, ANU Centre for Theoretical Physics

Member, Advisory Committee, Centre for the Science and Engineering of Materials



Electronic Materials Engineering

Professor R.G. Elliman

Member, Board of the Institute of Advanced Studies (from September)

Member, Electron Microscopy Unit Advisory Committee

Professor C. Jagadish

Member, Computing Policy Advisory Committee (until March 2000)

Coordinator, Physics Honours Program

Member, Board of Studies, Graduate Program in Physical Sciences

Member, Board of Studies, Graduate Program in Engineering (until March 2000)

Dr H.H. Tan

Member, Board of Studies, Graduate Program in Engineering (from March)

Professor J.S. Williams

Member, School Strategy and Policy Committee

Laser Physics Centre

Dr N.B. Manson

Convenor, Graduate Program in Physical Sciences

ANU Laser Safety Officer

Member, Board of Studies, Graduate Program in Engineering
Gender Equity Officer

Dr M. Samoc

Associate Editor, 2000 RSPHYSSE Annual Report

Nuclear Physics

Dr A.P. Byrne

Member, Board of Studies, Graduate Program in Physics

Convenor, Graduate Program in Physics (May)

BIAS representative, University Committee on Teaching and Learning

Member, "Adapting Boyer" Working Group

Member, Course Review Implementation Committee

Professor G.D. Dracoulis

Member, (IAS Representative), Promotions Committee of the Board of the Faculties

Member, (IAS Representative), Institute Planning Committee

Dr D.J. Hinde

Editor, 2000 RSPHYSSE Annual Report

Mr R.B. Turkentine

Member, Tender Evaluation Committee for the Supply of Liquid Nitrogen, Compressed Gases and the Procurement of Bulk Storage Liquid Nitrogen Vessels for the ANU

Optical Sciences Centre

Professor J.D. Love

Member, ANU Joint Committee on Postgraduate Awards

Member, ANU Major Equipment Committee

Plasma Research Laboratory

Dr B.D. Blackwell

Member, ANU Information Technology Sponsors Committee

Mr G.C.J. Davies

Member, Radiation Committee

Professor J.H. Harris

Member, Equity Diversity and Consultative Group

Member, Board of the Institute of Advanced Studies

Referee, IAS Performance and Planning Fund

IAS Representative, Review of the Faculties

Theoretical Physics

Professor R.J. Baxter

Member, ANU Centre for Theoretical Physics

Professor V.V. Bazhanov

Deputy Director, ANU Centre for Theoretical Physics

Professor R.L. Dewar

Faculty Board Representative on Board of the Institute of Advanced Studies

Director, ANU Centre for Theoretical Physics

Dr H.J. Gardner

Member, High Performance Computing Advisory Committee

Australian Representative on IUPAP Commission on Computational Physics (C20)

Dr B.A. Robson

RSPHYSSE Advisor on Integrity in Research

Convenor, Working Party, Jagadishwar Mahanty Prize