



Pioneering research
and skills

Head of Department
Edinburgh Research and Innovation
University of Edinburgh
Edinburgh Research & Innovation
Edinburgh United Kingdom
EH8 9TA

Grant Ref: EP/J500884/1

Date: 22 July 2011

Dear Head of Department

GRANT OFFER: Training Grant, Training Schools (Non-FEC)-NR1

GRANT TITLE: Scottish Mathematical Sciences Training Centre -- Follow-on funding for a Taught Course Centre for UK PhD students in the Mathematical Sciences

The EPSRC is offering a grant towards the cost of the above project, subject to the terms and conditions set out below.

Return of the 'Offer Acceptance' will be taken as acceptance of the grant on the terms stated. If you are unable to accept the grant you should return a 'Decline' confirmation as soon as possible. Upon receipt of the 'Offer Acceptance' a 'Start Confirmation' request will be issued.

Grants are cash limited and expenditure against the grant must not exceed the value awarded.

Please note copies of this letter have not been sent to the individual(s) named below. It is the responsibility of the lead Research Organisation to distribute copies as necessary.

Yours sincerely

Grants Pre Award Team
RCUK Shared Services Centre Ltd
A service provided on behalf of EPSRC

Organisation: University of Edinburgh

Grant Holder: Professor Anthony Carbery

Grant Title: Scottish Mathematical Sciences Training Centre -- Follow-on funding for a Taught Course Centre for UK PhD students in the Mathematical Sciences

Starts: 1 October 2011

Ends: 30 September 2016

GRANT VALUE

Funds Awarded

	RC Contribution (£)		
	net	Indexation	Total
Total - T&S	36,825	0	36,825
Total - Other Costs	113,175	0	113,175

Cost of Access to Facilities 0
(Funds not awarded to Grant Holding Organisation)

STAFF

Staff Summary

	RC Contribution net	Number Of Months
--	---------------------	------------------

Staff Details

Scale	Number of Months	Start Date	Increment Date	Name or Post Identifier
-------	------------------	------------	----------------	-------------------------

FACILITY AND SERVICE DETAILS

Facility	Cost of Access	Number of Units
----------	----------------	-----------------

SCHEME CONDITIONS

Terms and Conditions of Research Council Training Grants

These terms and conditions relate to training grants, comprising doctoral training grants (DTGs) and masters training grants (MTGs).

Training Grants awarded by the Research Councils listed below are made to Research Organisations on the basis of this single set of core terms and conditions. The Research Councils are:

Biotechnology and Biological Sciences Research Council (BBSRC)
Engineering and Physical Sciences Research Council (EPSRC)
Medical Research Council (MRC)
Natural Environment Research Council (NERC)
Science and Technology Facilities Council (STFC)

A Training Grant (TG) is a grant paid by a Research Council to a Research Organisation for the provision of postgraduate study.

Training Grants aim to:

- assist the Research Organisation to attract the best people into postgraduate research and training;

- allow a maximum of local discretion in managing and organising postgraduate training within clear financial and accountability arrangements;
- Provide resources in a flexible and transparent funding stream.

Subject to these terms and conditions, Research Organisations can decide on the level of stipend; the duration of a studentship; the format (e.g. part-time, industrial or work placement), and can adjust the number and start of awards within year and between years (where feasible).

Individual Councils may add additional conditions to the grant to reflect the particular circumstances and requirements of their organisation, or the nature of a particular grant. Acceptance of a Training Grant constitutes acceptance of both the core conditions and any additional conditions.

References in these terms and conditions to statutory provisions and guidance include any subsequent amendments or re-enactments.

The Research Council reserves the right to amend these terms and conditions, and where appropriate will consult the Research Organisation before major changes are introduced.

Definitions

Funding Assurance Programme (FAP): A programme of visits and office-based tests to seek assurance that grant funds are used for the purpose for which they are given and that grants are managed in accordance with the terms and conditions under which they are awarded.

Training Account (TA): A Training Account is made up of the overlapping Training Grants to a Research Organisation.

Doctoral Training Grant (DTG): a grant providing funds for the training of research students leading to the award of a recognised qualification, usually a PhD.

Masters Training Grants (MTG): a grant providing funds for the training of postgraduate students leading to the award of a recognised qualification, usually a Masters.

TA Coordinator: the principal contact at a Research Organisation for the Training Grant.

The role includes responsibility for ensuring the provision of data on the students funded through the Training Grants.

Departmental Account Manager: Where the TA supports postgraduate training across the whole Research Organisation, the Research Organisation may wish to identify individuals who act as the main contact point within particular departments for funded students.

Fees: The funds required by a University for a Student to register for a higher degree.

Je-S Studentship Details Portal (SDP): the Research Councils' web-based data collection system which Research Organisations use to return details of the students and student research projects funded from the Training Grant.

Research Council: any of the bodies listed above.

Research Organisation: The organisation to which the TG is awarded and which takes responsibility for the management of the research training programme and the accountability of funds provided.

Stipend: The funds awarded by the Research Organisation to students to cover their maintenance while undertaking postgraduate training leading to the award of a postgraduate degree.

Students: The term used to identify postgraduates who are funded through the Training Grant.

Studentship: The term used for the funding award made by a research organisation to a student for the purpose of undertaking postgraduate training leading to the award of a postgraduate degree.

Data Protection Regulations

The Research Councils will use information provided on the Training Grant proposal for processing the proposal or in relation to the administration of the Training Grant for the award of any subsequent grant, and for the payment, maintenance and review of the grant. This includes data submitted through the SDP. This may include:

- Registration of proposals;
- Operation of grants processing and management information systems;
- Preparation of material for use by referees and peer review panels;
- Administration, investigation and review of grant proposals;
- Sharing proposal information on a strictly confidential basis with other funding organisations to seek contributions to the funding of proposals;
- Statistical analysis in relation to the evaluation of postgraduate training and the study of trends;
- Policy and strategy studies.

To meet the Research Councils' obligations for public accountability and the dissemination of information, details of student

projects funded from Training Grants may also be made available on the Research Council's web site and other publicly available databases, and in reports, documents and mailing lists.

Freedom of Information Act and Environmental Information Regulations

Attention is drawn to the provisions of the Freedom of Information Act 2000 (FOIA) and the Environmental Information Regulations (EIRs). Research Councils have issued Publication Schemes which set out the types of information publicly available on their websites or published as documents. In addition, Research Councils have an obligation to respond to specific requests and may be required to disclose information about or provided by Research Organisations. In some cases the Research Council may consult the Research Organisation before disclosure, but it is under no obligation to do so. If a Research Organisation considers that any information it provides to a Research Council would be subject to an exemption under FOIA or the EIRs it should clearly mark the information as such and provide an explanation of why it considers the exemption applies and for how long. The Research Council will consider this explanation before disclosure, but it is not obliged to accept it as binding.

Where a Research Council determines that a Research Organisation is holding information on its behalf that it requires in order to comply with its obligations under FOIA or EIRs, the Research Organisation undertakes to provide access to such information as soon as reasonably practicable on request of the Research Council and in any event within 5 working days.

In some cases Research Organisations may be directly responsible for complying with FOIA and the EIRs; in such cases the Research Councils accept no responsibility for any failure to comply by the Research Organisations.

TGC 1 Responsibilities of the Research Organisation

The Research Organisation is responsible for selecting, administering and supervising students throughout their period of training, in accordance with current good practice as detailed in the QAA's Code of Practice for Postgraduate Research Programmes (2004), and in accordance with any additional Research Council requirements.

In particular, the Research Organisation must ensure that:

- Diversity and equality must be promoted in all aspects of the recruitment and career management of students;
- Adequate facilities and resources are made available for the research training;
- A safe working environment is provided, meeting the requirements of health and safety legislation, and any other legislation concerning the health, welfare and rights of students, including the Data Protection Act;
- Projects lie within the remit of the Research Council funding the TG;
- Research Training Programmes contain good training in generic and transferable skills

The Research Organisation must ensure that the research supported by the grant complies with all relevant legislation and Government regulation, including that introduced while work is in progress. This requirement includes approval or licence from any regulatory body that may be required before the research can commence. Where third parties, such as a regulatory body, become involved with investigating alleged breaches in legislation as a result of work funded by the Research Council, that RC must be informed immediately of the circumstances.

The Research Organisation must ensure proper financial management of TGs and accountability for the use of public funds. Research Organisations are expected to take reasonable steps to recover monies paid to students in advance who leave or whose studentship is terminated.

TGC 2 Research Governance

It is the responsibility of the Research Organisation to ensure that the research is organised and undertaken within a framework of best practice that recognises the various factors that may influence or impact on a student's research project. Particular requirements are to ensure that all necessary permissions are obtained before the project begins, and that there is clarity of role and responsibility among the research team (including the student) and with any collaborators. The Research Councils expect research to be conducted in accordance with the highest standards of research integrity and research methodology.

Research Ethics

The Research Organisation is responsible for ensuring that ethical issues relating to a student's research project funded from the TG are identified and brought to the attention of the relevant approval or regulatory body. Approval to undertake the research must be granted before any work requiring approval begins. Ethical issues should be interpreted broadly and may encompass, among other things, relevant codes of practice, the involvement of human participants, tissue or data in research, the use of animals, research that may result in damage to the environment and the use of sensitive economic, social or personal data.

Use of Animals in Research

Wherever possible, researchers must adopt procedures and techniques that avoid the use of animals. Where this is not possible, the research should be designed so that:

- The least sentient species with the appropriate physiology is used;
- The number of animals used is the minimum sufficient to provide adequate statistical power to answer the question posed;
- The severity of procedures performed on animals is kept to a minimum. Experiments should be kept as short as possible. Appropriate anaesthesia, analgesia and humane end points should be used to minimise any pain and suffering.

The provisions of the Animals (Scientific Procedures) Act 1986, and any amendments, must be observed and all necessary licences must have been received before any work requiring approval takes place. Please note the requirements in TGC 1 regarding any alleged breaches in legislation.

Medical and Health Research

The Research Organisation is responsible for managing and monitoring the conduct of medical and health research in a manner consistent with the Department of Health's Research Governance Framework for Health and Social Care. There must be effective and verifiable systems in place for managing research quality, progress and the safety and well-being of patients and other research participants. These systems must promote and maintain the relevant codes of practice and all relevant statutory review, authorisation and reporting requirements.

Health-related research within the social sciences that falls outside the Department of Health's Research Governance Framework must meet the provisions and guidelines of ESRC's Framework for Research Ethics. While this research may involve patients, NHS staff or organisations, it is defined as research that poses no clinical risk or harm to those who are the subjects of research. Research Organisations must ensure that appropriate arrangements are in place for independent ethics review of social science research that meets local research ethics committee standards.

Significant developments must be assessed as the research proceeds, especially those that affect safety and well-being, which should be reported to the appropriate authorities and to the Research Council. The Research Organisation must take appropriate and timely action when significant problems are identified. This may include temporarily suspending or terminating the research. The Research Organisation is responsible for managing and monitoring statutory requirements for which it accepts responsibility, for example, in relation to legislation on clinical trials, use of human organs, tissues and data.

Guidance by the MRC on the conduct of medical research, and by ESRC on the conduct of social science research, provided on behalf of all Research Councils, must be observed.

Health and Safety

The Research Organisation is responsible for ensuring that a safe working environment is provided for all individuals associated with a student's research project. Its approach and policy on health and safety matters must meet all regulatory and legislative requirements and be consistent with best practice recommended by the Health & Safety Executive.

Appropriate care must be taken where a student is working off-site. The Research Organisation must satisfy itself that all reasonable health and safety factors are addressed.

The Research Councils reserve the right to require the Research Organisation to undertake a safety risk assessment in individual cases where health and safety is an issue, and to monitor and audit the actual arrangements made.

Misconduct and Conflicts of Interest

The Research Organisation is required to have in place procedures for governing good research practice that meet the requirements of the Research Council's guidance on good practice. The Research Organisation must ensure that there are reliable systems and processes in place for the prevention of misconduct e.g. plagiarism, falsification of data, together with well-defined and clearly-publicised arrangements for investigating and resolving allegations of misconduct.

Where an allegation of misconduct arises in respect of a student supported by a Training Grant, the Research Council must be informed immediately and notified of the outcome of any investigation.

The Research Organisation must ensure that potential conflicts of interest in research are declared and subsequently managed.

TGC 3 Use of Funds

Subject to the following conditions, TG funds may be used, without reference to the Research Council, in such a manner as to best undertake the provision of training leading to the award of a postgraduate degree which must fall within the remit of the Council concerned.

Grant funds include a provision for inflation based on the GDP Deflators published by HM Government. The value of the grant may be varied by the Research Council during the lifetime of the grant in accordance with the deflators or to take into account any other Government decisions affecting the funding available to the Research Councils.

Grant funds cannot be used to meet the costs of any item where the activity falls outside the period of the grant, e.g. when travel falls outside the grant period, the costs cannot be charged to the grant even if the tickets, etc. can be purchased in advance

Other costs, for example those associated with the administration of the training, advertising costs and the costs of open days, may be incorporated into the fee level that the Research Organisation charges to the Training Grant as long as the same level of fee is used for UK/EU non-Research Council funded students on similar programmes. Such costs may not be taken from the training grant other than through the fee level; nor may individual RC students be charged additional fees above the level paid by the research council.

Student Eligibility

The use of funding to provide full awards or fees-only awards should be in accordance with student eligibility as determined by the Education (Fees and Awards) Regulations 1997 and subsequent amendments. An equivalent set of Regulations exists for Scotland.

Student Training

Funds may be used for student stipends, fees, project costs and the incidental costs of research training, such as travel and

conference attendance.

Students may be full or part-time. The Research Organisation may decide on the period of support for individuals (up to 4 years full time support). Part time awards should not normally be less than 50% of full time. Where the period of support for a student extends beyond the end date of a grant, the balance of support can be provided by the next or subsequent grant or from another source.

For any studentship where funding is drawn from a TA, either:

a) for a fees-only student, all the student's fees must be funded from the TA of a single Council;

or

b) where a student is eligible for a full award, at least 50% of the total cost of the studentship must be drawn from the TA of a single Council. The remaining costs may be funded from other sources, such as the research organisation's funds or from research partners. (Joint Research Council funding of multidisciplinary awards is possible on the basis of 50:50 funding from two Councils' TAs; in that case one of the Councils must be designated as the majority funder for monitoring and information purposes.)

Where a student is eligible for a stipend, the stipend awarded must be at least equal to the Research Councils' minimum rates for the relevant academic year. The Research Organisation may, if it wishes, pay a higher level of stipend, provided that it does not overspend the value of the grant.

The allocation of funds for the incidental costs of postgraduate training should have regard for the nature and complexity of projects and the need for fieldwork, conferences, broadening training and industrial or work placements.

Extensions, Suspensions and Terminations of Studentships

The Research Organisation must make suitable arrangements for coping with absences of students for illness, maternity leave, paternity leave, adoptive leave, extended jury service and holidays. All Research Council funded students are entitled to take 6 months of maternity leave on full stipend and a further 6 months of unpaid maternity leave. The Research Organisation must ensure that it is aware of unauthorised absences by students, so that future payments may be stopped and those already made in advance of need can be recovered. The period of a student's support may be extended at the Research Organisation's discretion to offset a period of genuine absence, subject to finding the necessary funding from within the Research Organisation's Training Account. Where there are insufficient funds in the Training Account to meet the costs of maternity leave, the Research Council will consider compensation at the end of the grant to cover the additional costs arising from maternity leave providing the RO can demonstrate that it lacks the flexibility to meet the costs of maternity support and that it has no other contingency funding of concurrent Training Grants on which it could draw.

Student Transfers

The grant will not be amended to take account of the transfer of a student from one Research Organisation to another or from one department to another within the Research Organisation. Transfers may be arranged where they are essential to the student's training e.g. when a supervisor is moving, and should be by agreement between the Research Organisations concerned. Research Council expects that the arrangements for such a transfer would include the relevant funds. The SDP should be updated following a student transfer.

Disabled Students Allowances

Students funded from a TG are eligible for additional support where, because of disability, they are obliged to incur additional expenditure in undertaking their training. Application and payment arrangements will be as specified by the Research Council.

Where a student is funded from two Councils' TAs, the application will be considered by the Council which is acting as the majority funder (see above).

TGC 4 Grant Arrangements and Starting Procedures

Grants are for a specified number of years, adopting fixed start and end dates. The Research Organisation must complete and return an acceptance and/or a starting certificate; these notifications will be taken as acceptance of the grant on the terms and conditions stated, and will activate profiled payments.

Submission of the starting certificate is required within one month of a student starting. Payment arrangements will be as specified by the Research Council.

TGC 5 Annual Statement

The Research Organisation may be sent a statement to return each year showing payments made by the Research Council during the previous financial year for all the grants it holds. Where a statement is required, the Research Organisation must certify, by returning the statement, that:

- expenditure has been incurred in accordance with the grant conditions, and
- those grants shown as current are continuing.

No further payments will be made until the annual statement has been received and accepted by the Research Council.

TGC 6 Expenditure Statements

At the end of the grant, the Research Organisation must complete and return a final expenditure statement (FES) detailing expenditure incurred over the full period of the grant. The FES must be received within three months of the end date of the grant. Once an FES has been received by the Research Council, and expenditure incurred has been reconciled against payments made, the statement will be considered as final. Facsimile or photocopies of the FES will not be accepted.

The Research Council reserves the right to require the Research Organisation to complete and submit a statement of expenditure at any time during the course of a grant, or to provide supplementary information in support of an interim or final expenditure statement.

TGC 7 Inspection

The Research Council reserves the right to have reasonable access to inspect the records and financial procedures associated with Training Grants or to appoint any other body or individual for the purpose of such inspection.

The Research Organisation must, if required by the Research Council, provide a statement of account for the grant, independently examined by an auditor who is a member of a recognised professional body, certifying that the expenditure has been incurred in accordance with the Training Grant terms and conditions.

Research Councils will undertake periodic reviews of Research Organisations within the Funding Assurance Programme (FAP) programme to seek assurance that Training Grants are managed in accordance with the terms and conditions under which they are awarded.

TGC 8 Sanctions

If the Final Expenditure Statement is not received within the period allowed, the Research Council may recover 20% of the expenditure incurred on the grant. All payments may be recovered if the statement is not received within 6 months of the end of the grant.

TGC 9 Public Engagement

It is the responsibility of the Research Organisation and the Supervisors to actively communicate the research to the public at both local and national level, and to raise awareness of the role of science and research in any related issues of public interest. Special schemes exist in some Research Councils providing additional support for these activities, or earmarked funding may be provided in the grant for this purpose.

TGC 10 Monitoring and Information Requirements

The Research Organisation will be required to provide the Research Council with standard information on students and their training programmes through the Je-S Studentship Details Portal (SDP) for inclusion in the Research Council's management information system.

Where a student is funded from two Councils' TAs, the information should be returned to the Council which is acting as the majority funder (see above), and not returned to the other council. Details of the secondary Research Council funder would be included in the submitted data.

Information should be entered within one month of the student starting their studies. Failure to provide this information may result in sanctions being imposed on future payments.

The Research Organisation should inform the Research Council of any significant changes to the student's research project funded from the TG, including change of supervisor or project objectives, by updating the SDP.

The Research Council expects that the start and end dates for the funded period of study will be agreed at the outset and would not be amended during the doctoral project unless exceptional circumstances apply. The Research Council will monitor any amendments to the start and end dates and reserves the option to apply original dates for assessing when thesis submission is due.

The Research Council should be notified through the Je-S SDP of students whose awards have been terminated, extended or transferred within a month of the change being formally agreed by the Research Organisation.

Research Organisations are also required to return information on the date of submission of the student's thesis.

The Research Organisation must make a clear statement, in relation to the Data Protection Act 1998, that personal information on students is being collected on behalf of the Research Council.

TGC 11 Commercial Exploitation

It is the responsibility of the Research Organisation, and all engaged in the research, to make every reasonable effort to ensure that the outcomes obtained in the course of the research, whether patentable or not, are used to the advantage of society and the economy. Research outcomes should be disseminated to both research and more widespread audiences - for example to inform potential users and beneficiaries of the research.

Responsibility for the arrangements relating to the ownership and management of intellectual property rests with the Research

Organisation. The Research Organisation will be expected to put in place an agreement regarding the relative contributions to the creation of intellectual property and any associated revenue sharing arrangements before commercialisation or exploitation commences.

Arrangements for collaboration and/or exploitation must not prevent the future progression of research and the dissemination of research results in accordance with academic custom and practice. A temporary delay in publication is acceptable in order to allow commercial and collaborative arrangements to be established.

TGC 12 Publication and Acknowledgement of Support

Publications and other forms of media communication, including media appearances, press releases and conferences, must acknowledge the support received from the Research Council(s).

TGC 13 Disclaimer

The Research Council accepts no liability, financial or otherwise, for expenditure or liability arising from the research funded by the grant, except as set out in these terms and conditions, or otherwise agreed in writing.

Where studies are carried out in an NHS Trust, the Trust has a duty of care to its patients. The Research Council does not accept liability for any failure in the Trust's duty of care, or any negligence on the part of its employees.

The Research Councils reserve the right to terminate the grant at any time, subject to reasonable notice and to any payment that may be necessary to cover outstanding and unavoidable commitments.

Further to TGC3, the Research Councils reserve the right to amend the payment profile at their discretion. The Research Organisation will be advised, in advance, of any such change. Changes to payment profiles may affect the overall value of the grant.

TGC 14 Status

These terms and conditions will be governed by the laws of England and Wales; all matters relating to the terms and conditions will be subject to the exclusive jurisdiction of the courts of England and Wales.

If any provision of these terms and conditions is found by a court or other legitimate body to be illegal, invalid or unreasonable, it will not affect the remaining terms and conditions which will continue in force.

These terms and conditions, together with any additional conditions set out in the grant, contain the whole agreement between the Research Council and the Research Organisation in relation to the stated grant. The Research Council and the Research Organisation do not intend that any of these terms and conditions should be enforceable by any third party.

ADDITIONAL INFORMATION TO ACCOMPANY TERMS & CONDITIONS

Following discussions between the Research Information Network, Research Councils, other funders and journal publishers, a standard format has been agreed for acknowledging funders in journal articles. This is to enable improved tracking of the publications generated by funded research projects.

For articles published in journals, or deposited in institutional or subject-based repositories, the acknowledgement of funding should take the form of a sentence as in the following example, with the funding agency written out in full, followed by the grant number in square brackets:

This work was supported by the Medical Research Council [grant number xxxx].

Multiple grant numbers should be separated by comma and space. Where the research was supported by more than one agency, the different agencies should be separated by a semi-colon, with "and" before the final funder. For example:

This work was supported by the Wellcome Trust [grant numbers xxxx, yyyy]; the Natural Environment Research Council [grant number zzzz]; and the Engineering and Physical Sciences Research Council [grant number aaaa].

CALL CONDITIONS

GRANT CONDITIONS

GRANT ADDITIONAL INFORMATION

Centres will be required to:

1. Collect and maintain comprehensive records covering the operation and management of the Centre, together with data on course provision, student attendance and feedback and assessment of courses.

2. Make arrangements for data and materials to be available for all courses so that departments can monitor attendance by their students and assess, by examination, students' understanding of course content.

3. Centre Directors must establish a forum to discuss best practice and issues of mutual interest. A representative of EPSRC Mathematical Sciences Capability should be an invited participant.
4. EPSRC reserves the right to visit Centres periodically to discuss progress and developments and to call Directors together to discuss collective issues and plans for future development.
5. After 3 years submit a written report to EPSRC detailing progress, in particular towards addressing points raised by the assessment panel and the transition to self-sustainability of the Centre.

This grant has a fixed start date of 01/10/11

This grant will be subject to an Interim Expenditure Statement (IES) 42 months after the start date. As this is a National Audit Office requirement profiled payments to the grant will be automatically suspended at this time until the IES has been received by the RCUK Shared Services Centre.

Co-Investigators:

Dr Penny J Davies of University of Strathclyde, University of Strathclyde
Dr Pieter Blue of University of Edinburgh, School of Mathematics
Professor Jack Carr of Heriot-Watt University, School of Mathematical and Computer Sciences
Professor Mark Chaplain of University of Dundee, Mathematics
Dr Alastair Crow of University of Glasgow, School of Mathematics & Statistics
Professor Meinolf Geck of University of Aberdeen, Mathematical Sciences
Professor Desmond Higham of University of Strathclyde, Mathematics and Statistics
Professor Alan William Hood of University of St Andrews, Mathematics and Statistics
Dr Radha Kessar of University of Aberdeen, Mathematical Sciences
Dr Ruth King of University of St Andrews, Mathematics and Statistics
Dr Rachel Norman of University of Stirling, Computing Science and Mathematics
Professor Richard Joseph Szabo of Heriot-Watt University, School of Mathematical and Computer Sciences
Professor James Wright of University of Edinburgh, School of Mathematics
Dr Stan Zachary of Heriot-Watt University, School of Mathematical and Computer Sciences