



Institute of Technology Tallaght
Institiúid Teicneolaíochta Tamhlacht

RESPONSES FROM THE INSTITUTE OF TECHNOLOGY TALLAGHT TO –

Report of the findings of the evaluation panel engaged to consider the application by the Institute of Technology Tallaght for accreditation to maintain postgraduate research degree register at Master's and Doctoral levels in the Biology and Chemistry sub-disciplines and at Master's level in Engineering and Science (all areas).

06 June 2007

Initial Response: 18th June 2007

Updated Response: 8th June 2009

1. Introduction

The Institute welcomes the findings of the research accreditation evaluation panel, and their recommendation that the Higher Education and Training Awards Council (HETAC) accredit the Institute of Technology Tallaght to maintain a register of postgraduate degrees **at Master's level (level 9) in the areas in Departments of Electronic Engineering, Mechanical Engineering, Science and Computing reflecting the expertise of the research-active academic staff** and **at Master's level (level 9) and Doctoral level (level 10) in the areas of Biology and Chemistry reflecting the expertise of the research-active academic staff**.

The professional manner of the panel was clear to all as they went about their discussions with the senior management team; research active academic staff; current and former postgraduate research students; perusal of research outputs; and viewing of relevant facilities.

The panel clearly identified much strength in the operation of the Institutes research programmes, such as leadership, strategic thinking, the enthusiasm of the staff, the record of staff in securing research funding, and their track record. The Institute takes note of the constructive suggestions of the assessors with regard to improvements and is fully committed to implementing the recommendations of the panel assessors. The first part of this document provides details of how the Institute has delivered on its commitment to provide a research supervisor training programme for novice supervisors and for experienced colleagues and how it proposes to do so in future academic years. The remainder of this document presents the Institute's response detailing how it will address the issues raised by the assessors.

2. Supervisor Training Programme

The Institute recognises that whatever future strategies are devised to improve the quality of research student training, their successful implementation will also depend on the quality of the supervisory training of the academics themselves. This is being supported through the Institute Staff Development budget.

The internal evaluation conducted for the Institute's Application to Maintain a Research Degree Register indicated deficiencies in supervisory training. Plans to address these were presented in the Section 3.2.4 of the *Institutional Self Evaluation Report for an Application to HETAC for Accreditation to Maintain Postgraduate Research Degree Register* documentation. Section 5.10.3 of the 2008 *Self Evaluation Report for Delegated Authority to Make Research Awards* elaborated more on the training provision for academic supervisors. The lack of a formal approach to supervisory training has now been replaced by structured workshops/seminar programmes as follows:

- Development of an Academic Researcher/Supervisor Training Programme: this was rolled out in Feb. 2007 [Programme in **Appendix 1**];
- Plans were set in motion for an extension of the Academic Researcher/Supervisor Training Programme for 2007/08 academic year [Programme in **Appendix 2**]; this included a number of workshops held in September 07 and January 08, at times and dates outside of formal semester teaching, to ensure the best possible attendance by academics and is now conducted on an annual basis or as required;
- The Institute was a founding member of the Strategic Innovation Funded Research Alliance Institute Sector project funded under Cycle 1 – main objective being the development of an accredited Graduate Research Education Programme across the sector, with modules to be delivered to supervisors as well as postgraduate students [Information is now available on the modules to be provided as listed in **Appendix 3**].

3. Response to Findings in Section 3 Research Environment (Appendix B)

The specific responses presented below outline the comments of the Institute on the improvements suggested by the assessors in their findings on the Research Environment and provide details on how they will be addressed:

3.1 Biology and Chemistry

3.1.1 *Is there an active, supportive academic environment and research community in the subject or discipline area for which accreditation is sought demonstrated by traditional research performance indicators?*

Areas for improvement: The current balance between time allocated to active research and to teaching work may be difficult to sustain. Current arrangements (2 hours credit against lectures per singly supervised postgraduate research student and 4 hours credit for leadership functions in an IRC) may not necessarily provide sufficient relief from academic and other pressures for active researchers. There is a need for protected ('ring fenced') time for research activity.

Institute Response: Prior to 2006, the time allocated to an academic staff member for active research was capped at 4 hours, in line with the IoT's Council of Directors (now Institutes of Technology Ireland) policy. The Institute of Technology Tallaght Strategic Plan 2005 – 2008 highlighted the need to review that Supervision Policy arrangement to help expand its critical mass of researchers. In Sept. 2006, this allocation of time was increased to the level indicated in the assessors report above, i.e. 6 hours, and for academics managing IRC's 10 hours, out of a total of 16 hours allocated to research. This is an improvement on what is still currently recommended by IOTI. While it is recommended that Academic Supervisors shall have a minimum of 33% of their teaching allocation associated with formal taught teaching programmes within their respective departments, the Sept. 2006 Institute Supervision Policy allows for a number of special cases to allow for experienced research academics to (1) seek increased allocation of research time, following approval of the Head of Department and (2) for a research supervisor to buy out some or all of their teaching hours, following approval of the President. The Research Strategy Group, convened by IOTI and chaired by the President of this Institute, is working to improve the research time allocation across the institute sector and has proposed a number of initiatives to help 'ring fence' funding to build on critical mass in its May 2006 report Institutes of Technology and the Knowledge Society – Building Research Capacity. It also proposes a research-structured career path for academics to include the creation of a Senior lecturer (Research). The SIF funded IOTI Research Office is also involved in this area.

3.1.2 *Is there evidence of academic guidance, authority and leadership?*

No response needed.

3.1.3 *Are there procedures for the planning and monitoring of postgraduate programmes of research within the discipline area?*

Areas for improvement: Currently the supervisor is present during all of the monitoring process. Clearly, it may be difficult for a student to openly discuss issues that may relate directly to their supervisor in their presence.

Institute Response: Students are encouraged to address issues with their co-supervisor or Head of Department on an informal basis at any time during their programme. There is also a formal complaints process in the Code of Practice, independent of the supervisor, which allows for the students to discuss supervisory issues with the Head of Department. The students are made aware of this at induction and in the postgraduate student handbook.

The current research regulations as outlined in the Code of Practice, Section 3.6, provides information on the independent Departmental assessment of the student progress carried out on an annual basis. This issue has been sent to the Postgraduate Policy Committee of Academic Council for further consideration and the Committee will examine what is current best practice within Universities and Institutes of Technology.

3.1.4 *Is there specialised training dictated by the discipline and the nature of the research being undertaken?*

No response needed.

3.1.5 *Are there staff who:*

-are willing to lead research programmes?

-are sufficiently qualified to the level of the programmes of research for which accreditation is being sought?

-have prior experience in the supervision of research students to successful completion?

-are engaged in research, advanced study and other activities relating to practice in the subject or discipline area concerned?

Areas for improvement: It is necessary to increase the pool of trained supervisors and strengthen the supervisory skills of experienced supervisors. This can be accomplished by establishing a research supervisor training programme both for novice supervisors and for experienced colleagues. There was evidence that this requirement is being actively pursued by management at ITT Dublin.

Institute Response: Plans for this across the Institute have previously outlined in Section 2 and associated appendices.

3.1.6 *Are there adequate physical resources as well as technical and administrative support structures and attendant staff appropriate to the research being undertaken?*

Areas for improvement: Faster, wider and more direct access to the research literature is necessary as a matter of some urgency and much desired by students. The currently available e-journal facilities are inadequate.

The panel was of the view that it is imperative (no less) that the HEA funded Irish Research Electronic Library (IREL)—accessible by university students (on and off campus)—should be made accessible by students attending the Institutes of Technology.

Students would benefit from 24 hour access to research laboratories. The procedure for gaining access to laboratory facilities out of hours is an obstacle to students and is discouraging to the active researchers. It is *essential* that more appropriate systems, with adequate safety safeguards, be established to provide active researchers (students and staff) with appropriate out-of-hours access to facilities.

The research environment could be enhanced by increasing the number of post-doctoral staff who have 'hands on experience' at the bench and from whom students could acquire technical/practical knowledge/experience.

Although laboratory space is currently adequate, it will limit expansion of student numbers.

The NMR installation has had a long service and is key for many projects: a plan for its replacement needs to be put in place. More generally, while the equipment is adequate, there is not the *abundance* of equipment that might be available in bigger facilities. The kind of equipment at issue includes, in the biological and biomedical areas for example: superspeed- and ultra-centrifuges, PCR machines, autoclaves, ice-machines, electrophoresis equipment for protein and DNA gels, dark rooms for developing films, UV spectrometers and fluorimeters, biological safety-cabinets, etc. In bigger biomedical facilities each student might have a bench-top microfuge and vortex mixer.

Institute Response:

Access to research literature: It is proposed to have on-going discussions between Supervisors and Heads of Department who will then bring deficits and suggestions for improvement to the Head of School for agreement by the Senior Management Team.

Access to the Irish Research Electronic Library: The Institute has been successful in securing access to the Irish Research Electronic Library with the HEA since the panel visit in 2007. The Registrar of the Institute is Chairperson of the Institute of Technologies and DIT Librarian Group which has been successful in opening up the IReL initiative to the sector.

Access to Research Laboratories: The Senior Management Team will look at best practice in the university and IoT sector with a view to improving access. Current access is consistent and in many cases better than access in other IoTs. The *current procedure* is as follows:

- Staff or post-graduate students must obtain the permission from a member of staff, at Head of Department/Function level, or higher, to obtain access to the institute outside of the normal opening hours. Consideration is given in making this decision to the health, safety and welfare of the student in the context of the proposed work to be carried out. Where appropriate, a risk assessment of the proposed work may be sought.
- The Estates Manager/Assistant Estates Manager will arrange for the member of staff/post-graduate student to collect and sign for a gate key from the Building Services Office. S/he will also inform staff in this office when they intend to call to the institute and will write this into the diary in the office in order that security staff will be aware of the time and date of the visit.
- On arrival, the member of staff/post-graduate student must inform the security staff of the area of the building where they will be working. Staff and post-graduate students must telephone the security officer every hour and report that they are okay.
- When leaving the building, the staff/post-graduate students must sign out in the diary in the Building Services Office. The gate key must be returned to staff in the Building Services Office when they are next in the institute and it must be signed in.

Increase in number of Post-doctoral Staff: The Department of Science with help from the Development Office will continue to promote funding opportunities for recruiting post-doctoral staff to academics at the Institute. This is an area that is also being addressed through the IOTI Research Strategy Group. The number of post doctoral fellows has increased as a result of funding received from PRSDP Strand 3, EI AREP programmes, and HEA PRTLII, Cycle 4. The Institute will continue to look at ways of increasing this number further in targeted areas as outlined in the Research Strategy 2008 - 2012.

Limitations in expansion of student numbers: In July and August 2007, dedicated research space in the Synergy Incubation Centre on campus was converted into an Applied Research laboratory that is being exploited by postgraduate researchers in the Departments of Science, Computing and Electronic Engineering primarily. The new PRTLII building is due to open in 2011 which is a research facility for

Applied Sciences for Health. In addition when the PPP funded expansion of the main campus is complete in five years time then more dedicated research space should be available.

NMR and large pieces of research equipment: A number of funding applications to the HEA (PRTLI, Cycle 4 and Research Equipment Grant Scheme) and Enterprise Ireland, to augment the research equipment and facilities have been successful in 2008 and 2009. A number of these specialist instruments have already been installed, e.g. a Bruker 500MHz Plus NMR, a JEOL JSM-6390 Scanning Electron Microscope, a Bruker Autoflex III Smartbeam MALDI-TOF Mass Spectrometer, and equipment specific to Process Analytical Technology research.

3.1.7 *Are there seminars, both focused and interdisciplinary, to facilitate the dissemination and exchange of the fruits of research, enabling peer review and quality assessment?*

Areas for improvement: While students are aware of, and frequently attend, seminars, the availability of seminars in the various subjects within the Institute itself is limited.

Institute Response: This is actively being pursued within the Institute, Departments, Research Groups and the Institute Research Centres, and an expansion in the number of internal seminars has occurred in all Departments. These are widely advertised throughout the Institute. An Institute-wide Research Colloquium is held annually to promote individual and group research activities across the Institute and encourage more interdisciplinary collaborations in the future.

3.1.8 *Are there opportunities for interaction with other postgraduate research candidates and their supervisors, both within and outside the institution and opportunities, where appropriate, for collaboration with other providers of higher education, industry and commerce and the public sector etc.?*

No response needed.

3.1.9 *Are there procedures for the implementation of quality assurance within the schools / departments concerned?*

No response needed.

3.1.10 Additional comments

No response needed.

3.2 Engineering

3.2.1 *Is there an active, supportive academic environment and research community in the subject or discipline area for which accreditation is sought demonstrated by traditional research performance indicators?*

Areas for improvement: While both Engineering departments are properly attentive to short to medium term goals and objectives, they may also benefit from developing, articulating and disseminating a shared vision of how to sustain and grow the research activity in the longer term. This vision might address, *inter alia*, strategies for attracting sufficient numbers of high calibre students to allow the research to grow.

The Institute is aware that the ability to disseminate research findings through publications is a critical outcome of any research degree programme; that this is an area in which it can and should improve and that research productivity will become increasingly important to enable the engineering research programmes at the Institute to compete for funding at national level.

Institute Response: The updated Institute Research Strategy document seeks to address this. In addition the Engineering Research Strategy will be updated to take on board the recommendations of the assessors.

In relation to enhancing research productivity, the recent establishment of an IRC in Mechanical Engineering; the impact of the collaborations with the SFI visiting Walton Professor, the strengthening of research links with the AMNCH (Tallaght Hospital) in Biomedical Engineering will contribute an increased performance in research publications in the future.

3.2.2 *Is there evidence of academic guidance, authority and leadership?*

No response needed.

3.2.3 *Are there procedures for the planning and monitoring of postgraduate programmes of research within the discipline area?*

No response needed.

3.2.4 *Is there specialised training dictated by the discipline and the nature of the research being undertaken?*

Areas for improvement: While all incoming graduate students undertake an Induction Course, repeated at intervals throughout the year, and they are provided with a detailed Postgraduate Student Handbook, the main training of graduate students is undertaken by the supervisor. The Institute may wish to consider if there is a need for a more structured approach to specialised training comparable and perhaps in partnership with the training programmes being developed in Biology and Chemistry.

Institute Response: School specific Health & Safety and Equality & Diversity training is conducted currently. Training in specialist areas for research projects is and will continue to be provided by the Supervisors and their collaborators, as required. The Integrated Product and Process Design Centre members aim to use their expertise to provide training for research degree students in the Department of Mechanical Engineering in programming, advanced CAD tools, FEA analysis and Advanced Manufacture Technologies (Rapid Prototyping & Manufacture). The newly formed research group in Innovative Medical Group will be an additional training resource. The Department of Electronics is currently expanding its programmes in semiconductor education and research. It is anticipated that the research conducted in Thin Film Technology will serve as a unique college resource by advancing in-house expertise in the area of thin film devices and promoting and expanding the institute role in advanced technology education and pre-competitive research in modules including:

- Analogue Electronics
- Digital Electronics
- Semiconductor Technology
- Instrumentations and Electronic measurements
- Optical communications
- Solid State Electronics.

The Centre for Applied Microelectronics aims to enhance the Institute's semiconductor training. There are strong links with Chemistry research within Electronic Engineering and multidisciplinary training for engineering postgraduate researchers is and will continue to be provided through the Enterprise Ireland funded commercial focused Microsensors for Clinical Analysis Research Centre. Research students in all areas of Engineering now have access to training modules through the Dublin Region Higher Education Alliance (see **Appendix 4**). The DRHEA Graduate Education Strand will radically reposition the Dublin region as an International Centre for Graduate and in particular, Doctoral Education, by combining the strengths of the participating institutions of DIT, IT Blandchardstown, UCD, TCD, NUI Maynooth, IADT and ITT Dublin. The DRHEA Graduate

Education Strand has established an inter-institutional network in the disciplines of Biomedical Science, Chemistry, Economics, Engineering, Physics and Politics/Sociology/Public Policy. Disciplinary Leaders have been working together and have already provided some advanced discipline specific taught modules and master classes available to all doctoral students in the alliance. A memorandum of understanding (MOU) for inter- institutional collaborative agreement on module delivery, graduate student mobility and credit exchange across the DRHEA has been prepared and will be signed and fully implemented by September 2009. More information on this can be obtained from **Appendix 4** and www.drhea.ie

The Institutes of Technology Ireland Research Alliance has developed a **Diploma in Research Practice**, Special Purpose Award, Level 9 (60 credits) for postgraduate research students and staff of the Institutes of Technology. The programme was validated in April 2009. Graduate Diploma in Research Practice modules available to all postgraduate researchers are listed below:

- a. Research Management
- b. Personal and professional development
- c. Communications for research
- d. Data analysis
- e. Innovation, creativity and entrepreneurship
- f. Research Methods.

3.2.5 *Are there staff who:*

-are willing to lead research programmes?

-are sufficiently qualified to the level of the programmes of research for which accreditation is being sought?

-have prior experience in the supervision of research students to successful completion?

-are engaged in research, advanced study and other activities relating to practice in the subject or discipline area concerned?

Areas for improvement: Notwithstanding that the record in respect of funding, collaboration and publications is currently good and appropriate to the current stage of development of research activity at the Institute, if the level and quality of the research activity is to improve, and it should, then staff and students require continuing support and *research* facilities must be improved. For example, the Institute may wish to consider how more time may be made available where necessary for staff to further their research development and how research time of research-active staff may be protected or “ring-fenced”. As in Biology and Chemistry, it is necessary to increase the pool of trained supervisors and strengthen the supervisory skills of experienced supervisors. See also related comments in section 3.1.1.

Institute Response: In relation to the ring fencing of time for research - the response is the same as that given in Section 3.1.1 for Biology and Chemistry.

Section 2 of this document and associated appendices outlines the Institute’s proposals for increasing the pool of trained supervisors and strengthening of the supervisory skills of experienced supervisors.

3.2.6 *Are there adequate physical resources as well as technical and administrative support structures and attendant staff appropriate to the research being undertaken?*

Areas for improvement: The students found that the lack of electronic access journals places them at a disadvantage relative to those who do have such access.

Faster, wider and more direct access to the research literature is necessary as a matter of some urgency and much desired by students. The currently available e-journal facilities are inadequate.

Institute Response: It is proposed to have on-going discussions between Supervisors and Head of Department who will then bring deficits and suggestions for improvement to Head of School for

agreement by the Senior Management Team. The availability of IREL journals has resulted in increased access to electronic journals.

3.2.7 *Are there seminars, both focused and interdisciplinary, to facilitate the dissemination and exchange of the fruits of research, enabling peer review and quality assessment?*

Areas for improvement: Notwithstanding the existing good work that is being done, the seminar programme could be enhanced so that students' experience is broadened.

Institute Response: The Institute will look at this with a view to identifying possible enhancements (e.g. regional or themed colloquia). An Institute-wide Research Colloquium is now held annually in June to promote individual and group research activities across the Institute and encourage more interdisciplinary collaborations in the future. Seminars are also organised through the individual Departments. Bioengineering seminars are organised through the Centre of Applied Science for Health, the Bioengineering and Technology Centre and the Biomed Research groups. The Department of Electronic Engineering hosts "Breakfast Research Group" meetings every 3 weeks.

3.2.8 *Are there opportunities for interaction with other postgraduate research candidates and their supervisors, both within and outside the institution and opportunities, where appropriate, for collaboration with other providers of higher education, industry and commerce and the public sector etc.?*

Areas for improvement: Some of these links have yet to be exploited.

Institute Response: All of the links presented in the submission documentation are in operation. The School and Departments will continue to strengthen these existing links and are actively working to explore new links.

3.2.9 *Are there procedures for the implementation of quality assurance within the schools / departments concerned?*

No response needed.

3.2.10 *Additional Comments*

Response to the Assessors Additional comments

The 2008 – 2012 Institute Research Strategy document addresses this. In addition it is proposed to update the Engineering Research Strategy to take on board the recommendations of the assessors.

3.3 *Computing*

3.3.1 *Is there an active, supportive academic environment and research community in the subject or discipline area for which accreditation is sought demonstrated by traditional research performance indicators?*

Areas for improvement: The most striking problem for Computing is the lack of a local "critical mass" of computing research students. Many graduates apparently prefer employment in industry to a research degree programme at the Institute and those that try to combine the two often fail to complete. The historical completion rate is low but the Department provided a satisfactory explanation for this.

The critical mass issue must be addressed immediately. The department needs to increase the number of students to provide the level of support needed from peers. The Computing department may wish to consider aligning its applied research with other research activities in the Institute where there is critical mass. Applied research in health informatics or interdisciplinary research involving the engineering, biomedical or pharmaceutical areas may provide opportunities. Even combining research student facilities (desks etc) with another department (either Science or Engineering) will help provide this peer support, even if only in a non discipline-specific manner.

Institute Response: A key objective in the 2008 – 2012 Institutional Research Strategy is the strengthening of research activities in certain prioritised research thematic areas in Computing, such as - E-learning, Mobile Computing, Interoperable Systems and the Semantic Web, Complex Emergent Systems. This underpins the Department research strategy for R&D in Computing over the next five years. The Department aims to strengthen the competitive research base, expand postgraduate research student numbers, and achieve recognition for excellence in research endeavours. Multidisciplinary research with Science and Engineering Departments is already underway.

The issue of critical mass and student numbers is one which has been tackled vigorously. It should be pointed out that since the visit of the panel of assessors the Department now has seven research students registered on Level 9 research programmes. The Department has recruited high calibre students from Mexico, Russia and India, through its international links. The number of registered students is comparable to that in mathematics and electronic engineering.

The Department has had the highest success rate for IRCSET awards in the Institute, and was awarded one of only five IRCSET scholarships awarded to the Institute of Technology sector in 2009. It also has a number of innovation partnership projects. Funding has been obtained under the Research Facilities Enhancement Programme to create a high quality dedicated research laboratory for computing students. It also makes use of the joint science and engineering Synergy Centre Technology Transfer Lab, which allows for computing researchers integrate with the wider Institute research community.

It is true to say that when the panel of assessors was at the Institute the numbers of active research students was small with one active and one deferred research student. However this ‘instantaneous’ number is not in keeping with the recent trend within the Computing over the past few years where there has typically been 3-4 active students on the register. The lower numbers in the recent past have been affected by the general climate and demand for computing graduates within Ireland. Many references (EGFSN, DCU vacancies report) have testified to the severe shortage of computing graduates in 2006. This shortage has grown in 2007 with the result that high quality computing graduates are routinely offered starting salaries in excess of €40,000 plus additional benefits. In an effort to overcome this difficulty the Department has recruited research students from abroad.

There is also a community of Level 9 students on the Department’s taught Masters of Science in Distributed and Mobile Computing. This programme with its cohort of 20 students provides a supportive community for research students through its seminars and seminar opportunities for research students. The training in research methods is taken by all Level 9 students in common. The technical modules on the Masters programme which are aligned to the research interests of the staff within the Institute are also available to MSc by research students. We believe that this provides substantial supporting base for research students in the Department of Computing.

3.3.2 Is there evidence of academic guidance, authority and leadership?

Areas for improvement: The outcome of the research work is good. The Institute would benefit from more exposure at international conferences and in Journal publications. This type of output should be factored into the planning for staff and students.

Institute Response: This is inferred in the previous response and is also actively being encouraged and supported at School and Department levels. More than half of the staff of the Department has published research findings within the past three years. Seven members of the Department have been supported financially to publish at international conferences. Notwithstanding this, the Department believes that there is a reasonable record of publication at national, European and international levels in both conferences and journals.

3.3.3 *Are there procedures for the planning and monitoring of postgraduate programmes of research within the discipline area?*

No response needed.

3.3.4 *Is there specialised training dictated by the discipline and the nature of the research being undertaken?*

Areas for improvement: The Institute may wish to consider developing a more structured approach to specialised training, comparable and perhaps in partnership with the training programmes being developed in Biology and Chemistry.

Institute Response: To support its postgraduate students the Computing Department has enhanced specialist training, particularly in the areas of mobile computing and E-Learning where it has a particularly good track record. It has made use of its collaborations with industry in that regard. Some targeted modules from the taught M.Sc. in Computing are also being offered to research degree students in the Department. Since the panel visit, on June 14th 2007 nine members of the staff have received training in research supervision for Computing to M.Sc. Level, in the form of a one day workshop. Computing Academics have also taken part in the Institute-wide Academic Researcher/Supervisor Training Programmes and refresher programmes.

3.3.5 *Are there staff who:*

-are willing to lead research programmes?

-are sufficiently qualified to the level of the programmes of research for which accreditation is being sought?

-have prior experience in the supervision of research students to successful completion?

-are engaged in research, advanced study and other activities relating to practice in the subject or discipline area concerned?

Areas for improvement: See comments on supervisor training elsewhere.

Institute Response: Section 2 of this document and associated appendices outlines the Institute's proposals for increasing the pool of trained supervisors and strengthening of the supervisory skills of experienced supervisors.

3.3.6 *Are there adequate physical resources as well as technical and administrative support structures and attendant staff appropriate to the research being undertaken?*

No response needed.

3.3.7 *Are there seminars, both focused and interdisciplinary, to facilitate the dissemination and exchange of the fruits of research, enabling peer review and quality assessment?*

Areas for improvement: The Department may wish to try to use seminars to foster interdisciplinary research to address the critical mass issue as outlined already.

Institute Response: The Department has a formal seminar programme itself. This is the main forum for dissemination of research results within the Computing Department. The School of Science and Computing will explore the possibility of a School-based approach to seminars and their organisation. Since the majority of the research projects involve industrial collaboration students also present their research findings to industry and have organised workshops on campus to promote their research in the past as previously mentioned in the accreditation submission documentation. The Department will continue to encourage and support this activity.

3.3.8 *Are there opportunities for interaction with other postgraduate research candidates and their supervisors, both within and outside the institution and opportunities, where appropriate, for collaboration with other providers of higher education, industry and commerce and the public sector etc.?*

Areas for improvement: See earlier comments under ‘research environment’. It may also be useful to consider increasing cooperation with foreign higher education institutions and research centres—there is already a link with Austria—through student and staff exchange.

Institute Response: See the earlier comments under ‘research environment’. The School and Department will take due regard of the recommendation to explore enhanced cooperation with foreign higher education institutions and research centres where there is already a link—through student and staff exchange.

The School and Department notes the constructive comments of the panel in respect of potential future strategies including collaboration in terms of co-locating computing students with Science or Engineering students to provide peer support. It may not have been brought to the attention of the panel but this co-location is already happening.

The Department has a strategic plan for research which seeks to improve and strengthen its collaboration with other departments and institutions/industry. The Department has collaborations with other third level institutions in Ireland and abroad, such as those presented in the submission document – DCU, TCD, the University of Rome, the Polytechnic University of Valencia, Spain, and is intent on developing these further. It would be fair to acknowledge that the visit of the panel of assessors has been a catalyst for further refinement of the Department’s research strategy in that regard.

3.3.9 *Are there procedures for the implementation of quality assurance within the schools / departments concerned?*

Areas for improvement: While there are procedures in place, it is difficult to assess them owing to the small numbers of students.

Institute Response: The Institute-wide guide the quality assurance procedures which are being implemented across the School. The School Quality Review Group which looks after procedures for teaching and research has a Senior Lecturer from the Department of Computing with responsibility for addressing procedures specifically related to Computing research. The Department of Computing has its own Research Committee, whose remit is to monitor the implementation of research related procedures, which it does effectively due to the small numbers of students involved. It has established

an efficient monitoring system for its students and supervisors and reports on its activities to the Head of School. The Committee reviews its operations on an annual basis.

3.3.10 Additional Comments

Response to the Assessors Additional comments - The School and Department welcomed the opportunity provided by the visit of the panel of assessors to engage in robust discussion about its achievements and projections in respect of the research programmes operating in the Department of Computing.

The School and Department welcomes the recommendation of the assessors to HETAC accredit the Department.

The School and Department welcome the strong acknowledgement of the effective monitoring and supervisory role played by the Department of Computing research committee.

The School and Department believe that the numbers of sufficiently qualified staff to PhD level available for research supervision has been adequate for the output of graduates to date. Currently working in the Department are four research supervisors who have successfully brought students through a Masters of Science by research programme.

The strategy for the next five years is to monitor research performance more closely; to re-establish the Seed Fund to support emerging researchers; to implement a series of new Institutional incentives to encourage and maintain the momentum of academics involved research activity; to develop more collaborative agreements for applied research activity, which has been quite strong to date in Computing. The Department of Computing specifically seeks to deliver on its overall strategic objectives in relation to research, i.e. *to cultivate and sustain a research and development programme to international standards which will support and enhance its undergraduate and postgraduate programmes*. To achieve this objective the Department has set the following specific goals:

- To successfully compete for funding for its research and development programme from national and EU sources, and from private industry
- To encourage and facilitate researchers, new and existing to progress and develop their expertise
- To ensure that the results of the ongoing research in the department are reflected in the delivery of undergraduate and taught postgraduate programmes
- To expand and deepen research collaboration, both within the department and with other institutions, both nationally and internationally
- To disseminate the outputs of the department's research as widely as possible, and in particular to achieve validation of this research through publications in international conferences and journals
- To engage in technology transfer and other development programmes which help to enhance the capabilities of local industry in the field of computing
- To increase the number of postgraduate students graduating from the department, and to expand the department's research programme to include both MSc and PhD graduates.

Short term goals for the advancement of research in the Department as identified in the Department's Team Plan include - Improve management and support of existing research; Review research environment; Provide training programme for staff supervising projects at Level 9; Maintain support of dissemination; Seek range of funding sources.

Inter-disciplinary collaborations within the Department, with researchers in other departments and other institutions will continue to be encouraged and supported.

4. Comments relating to General criteria (Appendix A)

The specific responses presented below outline the comments of the Institute on the improvements suggested by the assessors in their findings relating to General Criteria and provide details on how they will be addressed:

4.1.1 Regulations and code of good practice

No response needed.

4.1.2 Research Performance Indicators

No response needed.

4.1.3 Intellectual Property

No response needed.

4.1.4 Research administration and Quality assurance

Areas for improvement: Much of the research administration is carried out by academic staff, with the development of larger numbers of staff, students and research centres it will be necessary to improve relevant infrastructure by providing enhanced administrative support e.g. in the administration of grants, reporting and grant preparation.

As already mentioned the Institute needs to free up more time from administration for research active staff.

Institute Response: The Institute takes due cognisance of this recommendation and will be explore the 'research administration' issue at Management Level.

With regard to the "administration of grants, reporting and grant preparation" issue highlighted this will be taken up by the R&D Committee and plans for improvement will be formulated.

4.1.5 Research leadership and motivation

No response needed.

4.1.6 Monitoring research Progress

No response needed.

4.1.7 Equality of opportunity

No response needed.

4.1.8 Feedback, complaints and appeals

No response needed.

4.1.9 Information: Research Studies Programme

No response needed.

4.1.10 Access to research degree programmes

No response needed.

4.1.11 Transfer between the Doctoral and Master's Registers

No response needed.

4.1.12 Direction, supervision, support and training of students (including access to information)

Areas for improvement: Generally, interaction with other research organisations could be further expanded to improve graduate training and the research environment. In this respect the welcome new developments relating to Graduate Research Education Programmes need to be vigorously pursued.

Institute Response: This has been pursued at Institute and Sector level, as indicated previously. We will endeavour to exploit all avenues to enhance the research and training experience of our staff and postgraduate researchers, particularly with our collaborating partners. Plans for how this will be implemented and acted upon are given in the update Research Strategy for 2008 – 2012 where increased external interactions are proposed not only to help in improving and sustaining research activities but also to enhance the overall training experience and research environment.

4.1.13 Postgraduate research degree: Assessment of the student

No response needed.

4.1.14 Supervisor training and support

Areas for improvement: The pool of trained supervisors must be extended and the skills of experienced supervisors strengthened by establishing research supervisor training both for novice supervisors and for experienced colleagues. There was evidence that this requirement (no less) is being actively pursued by management at ITT Dublin.

Institute Response: The now has a schedule for supervisor training and this includes workshops on Supervisory Roles, Regulations, Management of Research Students and Projects, Ethics, Research Proposal Writing. Section 2 of this response document and associated appendices provides complete details of the annual supervisory training programmes available.

4.1.15 Postgraduate research degree: Assessment of the student

No response needed.

5. Additional Comments

Response to the Assessors Additional comments - Critical mass and facilities are issues of strategic importance and plans for improvements in that regard are provided in the separate ITT Dublin Research Strategy 2008 – 2012 document. The Institute will continue to some provide financial support to staff that are actively pursuing PhD degrees and through at management level will explore how this can be dealt with at local level with academic staff, as appropriate to the discipline areas.

APPENDIX 1

Academic Researcher/Supervisor Training Events Sample Schedule 1

All sessions held in the Synergy Centre (Glasshouse Room) unless otherwise stated

Session	Presenter
Code of Practice for Research Degree Programmes Making Use of the Synergy Centre for Research	Dr. Mary Deasy Ms. Nicola Mountford, Synergy Centre Manager
Intellectual Property and Commercialisation of Research	Mr. Pat O' Donnell
The Selection of Postgraduate Researchers & the Interview Process I Research/Grant Proposal Writing Workshop I	Mr. Michael Quinlan Drs. Denise Egan; Eamon Maher; Brian Murray
Research/Grant Proposal Writing Workshop II	Dr. Denise Egan

APPENDIX 2

Academic Researcher/Supervisor Training Sample Schedule 2

All sessions will be held in the Synergy Centre (Glasshouse Room) unless otherwise stated

Session	Presenter
Ethics in Research half-day workshop General Ethics Principles	Dr. David Cox , RCSI Dr. David Cox, RCSI
Parallel Session 1 –Ethics for Science/Bioengineering Research	Dr. David Cox, RCSI
Parallel Session 2 –Ethics for Research in Business/Humanities	Dr. Joe Mac Donagh, ITT Dublin
The Supervisory Role, Responsibilities, Research Regulations, Management of Research Students & Projects, Case Studies ...	Prof. Anthony Fell, Bradford University, UK
Information Resources for Research ITT	Ms. Gillian Kerins, Mr. Philip Russell, Dublin
Ordering of Research Materials (Agresso) Research Tools: Data Collection & Analysis	Mr. Pat O'Donnell, ITT Dublin Mr. James Reilly, Dr. Terry Maguire, Dr. Gloria Crispino, ITT Dublin
Research/Grant Proposal Writing Workshop	Drs. Denise Egan; Eamon Maher; Brian Murray
Commercialising Your Research	Ms. Nicola Mountford, Mr. Pat O'Donnell, ITT Dublin
The Selection of Postgraduate Researchers & the Interview Process II	Mr. Michael Quinlan

Institute of Technology Tallaght

Annual Research Supervision Workshop

Sample Schedule

Session 1

9.15 – 9.30	Registration & Coffee/Tea
9.30 – 9.35	Welcome & Introduction to the Workshop
9.35 – 9.40	Aims & Objectives of the Workshop
9.40 – 10.10	Experience of being supervised for a Research Degree – Characteristics of a research degree programme
10.10 – 10.30	The key responsibilities of Research Students – and Research Supervisors <i>Small Group Discussions</i>
10.30 – 10.50	<i>Tea / Coffee</i>

Session 2

10.50 – 11.30	Strategies for effective Research Supervision, Monitoring and Assessment: Part 1 <ul style="list-style-type: none">• International / National context• Early stages in starting off the research programme<ul style="list-style-type: none">➤ <i>Ground rules and agreement on meetings</i>➤ <i>Development of research programme</i>➤ <i>Gantt Chart analysis</i>➤ <i>Training Needs Analysis</i>➤ <i>PG Research Training Record</i>➤ <i>Best practice for progress monitoring – records</i>➤ <i>Key stages – Transfer from Masters to PhD (HETAC Process)</i>
11.30 – 12.45	Syndicated Workshop Discussions on Case Study #1: “The First Year”
12.45 – 13.45	Lunch

Session 3

- 14.00 – 14.20** Brief Discussion of Case Study outcomes
- 14.20 – 14.50** Strategies for effective Research Supervision, Monitoring and Assessment:
Part 2
- Stratagems for timely finishing of the MPhil, PhD Thesis
 - Examination process and Selection of Examiners (HETAC Process)
 - Best practice for the *Viva*
 - Post-Examination
 - Appeals & complaints
- 14.50 – 15.10** Local Research Supervision Issues
Presentation based on Local Codes of Practice and Regulations
- 15.10 – 15.30** *Tea/Coffee*

Session 4

- 15.30 – 16.10** Syndicated Workshop Discussions on Case Study #2:
“The Viva”
“The Final Year”
“The experience as an Internal Examiner”
“Transfer to PhD Track”
- 16.10 – 16.20** Feedback
- 16.20 – 16.30** Concluding Discussion:
- Participants’ Issues
 - Supervising Part-time Off-Campus Students
 - Other Local Issues
- 16.30** Closing Remarks

APPENDIX 3

A consortium of Institutes has been convened to deliver research education and training for students and staff, and has secured Strategic Innovation Funding primarily to formalise this consortium into a **Research Alliance** that will greatly enhance the rate, scope and depth of the sector's strategic and professional approach to the delivery of postgraduate research degree programmes.

The Institute of Technology Tallaght is an active participant of this alliance which is led by the Institute of Technology Sligo. The Alliance is mentored by collaborators in NUI Galway, NUI Maynooth, the University of Ulster and the University of Melbourne.

The Institutes of Technology Ireland Research Alliance has developed a **Diploma in Research Practice, Special Purpose Award, Level 9** (60 credits) for postgraduate research students and staff of the Institutes of Technology. The programme was validated in April 2009.

Graduate Diploma in Research Practice modules are listed below:

- a. Research Management
- b. Personal and professional development
- c. Communications for research
- d. Data analysis
- e. Innovation, creativity and entrepreneurship
- f. Research Methods.

APPENDIX 4

The Dublin Region Higher Education Alliance (DRHEA) is a strategic alliance of the Higher Education sector in the wider Dublin city-region. It includes four Universities and their linked Colleges (TCD, UCD, DCU and NUIM) and four Institutes of Technology (DIT, IADT, ITB and ITT Dublin), many with long established and internationally renowned reputations for excellence in teaching and research. It has been awarded funding under the Higher Education Authority's Strategic Innovation Fund Cycle II (SIF II). The DRHEA has been created to strengthen the region's higher education sector as an important contribution to the growth of Dublin's competitive advantage in a European and broader international context. It seeks to combine the strengths of its constituent member institutions in key areas, driving economies of scale and efficiencies that will enable both forward-planning and agile responses to national and international demands for high quality, accessible Higher Education that underpins sustainable socio-economic development. The eight members of the Alliance have identified four strands of activity where collaborative action will lead to efficiencies and increased capacity for development: **Enhancement of Learning, Graduate Education, Internationalisation and Widening Participation.**

In relation to graduate education the DRHEA seeks to radically reposition the Dublin region as an International Centre for Graduate and in particular, Doctoral Education, by combining the strengths of the participating institutions. It has established an inter-institutional network in the disciplines of Biomedical Science, Chemistry, Economics, Engineering, Physics and Politics/Sociology/Public Policy. Disciplinary Leaders have been working together and have already provided some advanced discipline specific taught modules and master classes available to all doctoral students in the alliance. See www.drhea.ie for more information. A memorandum of understanding (MOU) for inter- institutional collaborative agreement on module delivery, graduate student mobility and credit exchange across the DRHEA has been prepared and will be signed and fully implemented by September 2009.