

MSC IN MEDICAL DEVICE DESIGN  
QUALITY IMPROVEMENT PLAN  
OCTOBER 2015

1. **Recommendations within Peer Review Group Report**

1.1. Programme Management & Risk Assessment

Recommendation		Department / School Response / Action to recommendation	Responsibility	Time-frame / Status (From - to)
1.1.1	There appears to be a lack of industry awareness of the differential this programme delivers – the programme should be promoted through case stories and through awareness within the state bodies such as Enterprise Ireland, the Local Enterprise Boards, Innovation Vouchers and the IDA.	<ul style="list-style-type: none"> <li>Stand taken at Med in Ireland 2015 on October 29<sup>th</sup>.</li> <li>Presenting at IDA Ireland Drug Delivery Device Forum - November 10<sup>th</sup> 2015.</li> <li>Project featured in Irish design and Medical technology booklet.</li> <li>We will develop a 15 min presentation for product design staff to present to Enterprise Boards etc. Possibly two types of presentation, one for large corps and one for the individual entrepreneurs.</li> <li>We currently have an EI funded project ongoing with Cara Mobility</li> <li>We will leverage our existing contacts for project development.</li> </ul>	EO'D/ DV	<ul style="list-style-type: none"> <li>October 29<sup>th</sup> 2015</li> <li>Nov. and ongoing</li> <li>Sept. 2015 complete</li> <li>Dec 2015</li> <li>On an annual basis</li> </ul>
1.1.2	The programme title 'Medical Device Design' is not descriptive of the value that graduates can deliver to the industry and a change of title could be considered. Perhaps 'Medical Design' as a title with a tag-line added which highlights the user experience elements and the development of better services should be emphasized more and would be more descriptive of the programme and facilitated promotion.	<ul style="list-style-type: none"> <li>After consultation with the course team a new title has been proposed - <b>Medical Design: Devices, Services and User Experiences</b></li> <li>The proposed new title has been put to recent graduates working in industry by means of an email mailing list. The response from graduates has been well considered and thoughtful. It is believed by many graduates that the word "device" is a crucial part of what is now the course's respected 'brand'. Changing the title would reposition the course and lead to uncertainty about the skillset provided.</li> </ul>	EO'D	<ul style="list-style-type: none"> <li>Completed</li> <li>It has been agreed to retain the existing title of the course for the reasons outlined.</li> </ul>

1.1.3	A shadowing process for the key programme deliverers should be established in order to provide backup to the current staffing and better risk management for the programme participants.	<ul style="list-style-type: none"> <li>• Course co-ordination duties and responsibilities are now shared between EO'D and DV. This will provide support subject to any further staffing changes. The technician role will now be split between two members of staff.</li> <li>• A detailed document defining roles and responsibilities will be produced.</li> </ul>	EO'D/ DV	<ul style="list-style-type: none"> <li>• Complete</li> <li>• End November 2015</li> </ul>
1.1.4	Everything should be clearly documented so that if need be, others can take up the running.	Documentation will be put in place with agreement from the programme team. Course documentation and timetables are now shared through Google Drive and Calendar systems. See also above for roles and responsibilities.	EO'D/ DV	End November 2015
1.1.5	Consider the possibility of a longer Masters programme –18 or 24 months (90 credits with RPL or 120 credits such as UCD have) to facilitate longer projects, industry or clinical internships and deeper learning. This would also enable students to take advanced modules delivered on complementary programmes such as the new Masters in Interaction Design, or students from non-design backgrounds to take foundation level modules in core subjects.	<ul style="list-style-type: none"> <li>• We agree there is a market for a longer, more advanced masters programme which would benefit student learning however this would require extra resources or collaboration.</li> <li>• Discussion on extending the Masters programme will take place in 2016 in preparation for 2017-18 prospectus. This will also be considered in relation to the rollout of the new MFA in Design programme.</li> <li>• MDD students are, from this academic year, undertaking the College-wide Research Methods module together with the NCAD MFA and Structured PhD programmes.</li> <li>• Further collaborations are envisaged with the MA Interaction Design and the MFA in Design.</li> </ul>	EO'D /Head of ID	<ul style="list-style-type: none"> <li>• June to September 2016</li> <li>• 2015/16 Academic Year</li> <li>• 2016/17 Academic Year</li> </ul>

**1.2 Physical and Financial Structure of the Programme**

Recommendation		Response / Action to recommendation	Responsibility	Time-frame / Status (From - to)
1.2.1	Establish a Usability Lab as a key to supporting the learning goals and exploration process and iterative nature in creating better solutions and outcomes. It also supports the differentiation of this programme and allows NCAD to leverage and to add value for industry partners and to ensure user integration and evaluation. It will provide an environment for interaction for students on the new Interaction Masters and MDD. It is important for the Lab to be on open access to all Design students.	<ul style="list-style-type: none"> <li>• A Usability Lab would be very useful to programme learning and an expression of interest has been submitted to Enterprise Ireland to get funding for human focused interaction lab. Initial enquiries have been made with Nypro, Hollister, Arc Devices, the Mater hospital and other potential collaborators.</li> <li>• EO'D has undertaken an AMMI HE75 Human Factors course.</li> <li>• MDD agrees that such a Lab will be valuable to all Design</li> </ul>	EO'D/ DV/ SR	<ul style="list-style-type: none"> <li>• Ongoing but dependent on resources (space/funding)</li> <li>• October 2015 – completed</li> <li>• Ongoing but dependent on resources (space/funding)</li> </ul>
1.2.2	The high-precision 'clean' room needs to be reactivated for student access as this will be the structure and environment that these students will work within. There may be a need for investment into a rapid-prototyping of soft plastics. Other equipment which would be useful: eye-tracker, usability test software and associated technical training e.g. Morae.	<ul style="list-style-type: none"> <li>• MDD has not had a "clean" room as such before but it is a good suggestion. We could certainly move towards the studio being a "clean" medical space.</li> <li>• Some new equipment has been purchased for the department but there are currently resource difficulties that limit purchase of larger equipment. With the advent of cheaper and more reliable 3D printers a new soft plastics printer will be investigated.</li> </ul>	DV/ EO'D	<ul style="list-style-type: none"> <li>• December 2015</li> <li>• October 2015 and ongoing but dependent on resources</li> </ul>
1.2.3	Make certain access is provided for MDD students to equipment which may be available for Interaction Design in UCD or TCD.	We don't currently have contacts in these areas and are not familiar with the available equipment. Research into the viability of access to equipment in UCD and TCD will be made during the academic year.	Course team MDD/Interaction	June 2016
1.2.4	Ensure direct access to on-line journals in the medical field for students.	We will discuss access to medical journals and UCD Library resources with the NCAD librarian.	SR	Ongoing discussions December 2015

**1.3 Staffing & Assessment**

<b>Recommendation</b>		<b>Response / Action to recommendation</b>	<b>Responsibility</b>	<b>Time-frame / Status (From - to)</b>
1.3.1	An additional lecturer is urgently needed for programme sustainability and growth. The PRG recognize and commend the excellent work of the current Programme leader but at the same time note the major risk to the programme should the Leader be unavailable for any period of time. The current workload for the Programme Leader is not sustainable for any growth or development of the Programme.	Course co-ordination duties and responsibilities are now shared between EO'D and DV.	SR/ EO'D	September 2015 and in place
1.3.2	A replacement of the current highly experienced technician is crucial. The programme cannot be delivered without a technician dedicated to the Medical Device Design programme.	Technician support for the programme will now be split between 2 staff members with training conducted by the existing technician. This will facilitate more continuous support throughout the programme.	EO'D/ SR/ DV	September 2015 and in place
1.3.3	A general comment from students and former students was that feedback to students on their project work needs to be more timely to allow students to benefit from the feedback. Additional lecturers on the programme will allow for more opportune feedback.	Additional lecturing staff are now in place. Feedback review dates will be timetabled at various points throughout the year.	EO'D/ DV	Timetables in September 2015 for 2015/16 Academic Year

**1.4 Teaching & Learning Strategies**

Recommendation		Response / Action to recommendation	Responsibility	Time-frame / Status (From - to)
1.4.1	The PRG recommend the creation of a common starting point for MDD and Interaction Design at the start of Semester 1. Both programmes could focus on fundamental knowledge such as human perception, cognition, prototyping skills, design thinking and creativity and research techniques.	<ul style="list-style-type: none"> <li>Both courses will be doing a common research methods module.</li> <li>Further synergies could be found in human factors, bioinstrumentation and some software classes. It is proposed that these courses could be taken as an audit for MDD/MA students.</li> <li>There are some common week long break-out projects also in the first year.</li> </ul>	EO'D/ EC/ MH	<ul style="list-style-type: none"> <li>From Sept. 2015</li> <li>2015/16 Academic Year</li> <li>2015/16 Academic Year</li> </ul>
1.4.2	Establishing a user interface lab would help foster a research rich environment where research would inform teaching at both UG and Masters level.	MDD concurs that such a lab would help foster a research rich environment. Such a lab is dependent on resources being available.	EO'D/ DV/ SR	See 1.2.1
1.4.3	Learning outcomes to each project need to be explicit and conveyed to students at the start of the programme or, at the very least, at the start of the project. Each student must be able to demonstrate achievement of core components of the programme e.g. an awareness of regulations and new directives in relation to MDD. This will help to ensure that each student achieves proficiency in all core components of the programme, while still enabling students to benefit from group projects and peer learning.	An academic brief with clear learning outcomes will be presented at the start of each project. All module learning outcomes relate to the programme learning outcomes and will be made clear to students.	EO'D/ DV	In place for 2015/16 Academic Year
1.4.4	One of the major projects could concentrate on usability and/or combine with interaction design to foster and demonstrate the uniqueness of this programme.	All major projects have a strong human factors/interaction element. The course timetable has been modified to ensure that this year's first major project has a particular focus on usability and interaction.	EO'D/ DV	In place for 2015/16 Academic Year
1.4.5	The creation of a vivid discourse around aesthetics and medical design would greatly benefit the programme and student learning, and would play to the unique strengths of the programme and NCAD.	Experienced industry based designers provide specific teaching input relating to aesthetics / brand / medical.	EO'D	In place for 2015/16 Academic Year

1.4.6	Project work should be more clearly linked to the theory learnt at that stage of the programme – co-design the briefs with industry partners for the students.	All industry projects are currently co-designed with our collaborators. In the future industry projects will be run in the second semester with a stronger focus on theory in the first semester. This will allow more time for students to absorb the theory before applying it. Clear learning outcomes for each project will be used to align the project work with the theory learned.	EO'D	In place for 2015/16 Academic Year
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**1.5 Concluding Recommendation**

<b>Recommendation</b>	<b>Response / Action to recommendation</b>	<b>Responsibility</b>	<b>Time-frame / Status (From - to)</b>
<p>After 5 years of the programme, there is reason to celebrate its success and to create a step-change. The PRG recommend inviting all industry partners to an event in order to discuss how they can be part of this step-change in this world-leading programme</p>	<p>The programme proposes an event to showcase our graduates achievements and their influence on the medical device industry. We will be inviting graduates, industry partners and other institutes with which we collaborate. This will include a panel discussion, industry participate symposium on and exhibition of past work. It will allow further promotion of the success through the past 6 years.</p>	<p>DV/EO'D</p>	<p>March 2016</p>

**2. Recommendations within Programme SER supported by Peer Review Team**

<b>Recommendation</b>		<b>Response / Action to recommendation</b>	<b>Department / School Response / Action to recommendation</b>	<b>Responsibility</b>	<b>Time-frame / Status (From - to)</b>
2.1	Significant changes have occurred in the delivery of the curriculum elements provided by TCD and UCD over the last number of years. In light of these changes and in response to the adherence of NCAD to UCD Academic Regulations as required under the Memoranda of Agreement entered into by the two institutions, a new structure is proposed for the course.	A new structure has been proposed as per the programme specification. This takes account of the changes at TCD/UCD.	The programme team have worked towards a new programme which reflects these changes and facilitates continued co-operation with a revised structure.	EO'D / SR	A revised structure has been enabled by the review process and programme changes will be submitted to UCD UPB for approval in Semester 2 2015/16 Academic Year
2.2	There is currently no formal programme committee for the course with course planning meetings and reviews organised on an informal basis. Matters of curriculum, delivery and QA are referred to the Taught Programme Board of the college which has oversight responsibility for the MSc. A programme board will be put in place to facilitate the organization of the programme.	A programme board has been put in place consisting of: Course Co-ordinator Lecturer Head of Department	Inclusion of the Head of Dept on the programme board will facilitate direct reporting to the Taught Programme Board. Course programme board meetings will be scheduled to align with Taught Programme Boards.	SR / EO'D / DV	In place by October 2015 - completed
2.3	Given the admin burden involved in this programme the course needs a dedicated part time administrator. The introduction of the MA Interaction Design may provide the opportunity to appoint a part-time administrator for both courses.		The department will submit a formal request to provide additional administration support for the existing course and also the new MA Interaction Design. A part-time role is proposed for this much needed support.	SR	Request submitted October 2015  Resource dependent



2.4	...the number of applicants to the programme could be enhanced through more extensive promotion of the MSc. There is currently little or no promotion or advertising done on the course. The course regularly attracts non EU applicants despite the lack of promotion. The number of non-EU applicants could be improved significantly through linkage into the UCD international offer and this could improve the financial situation of the course.		The department is working to facilitate greater awareness amongst undergraduate students to enable a pipeline of post-graduate candidates. Non-EU promotion links are at an early stage between UCD and NCAD - it is expected that applications will improve in the following year as course material is adequately promoted. Input from Student Services and Admissions will be sought to provide an international course promotion strategy.	EO'D / SR	Linkages between UCD & NCAD ongoing.  International promotion for 2016/17 commencing in December 2015
2.5	For the future we need to create opportunities for deeper, more analytically based, research (and research training) facilitated by robust industrial and academic partnerships. This should include the provision of a human factors laboratory in NCAD in order to develop research capacity.	See 1.2.1	The department is currently Work Package leader as part of a €3 million EU funded FP7 research project. Whilst the focus is not on Medical Device Design it demonstrates capacity to engage in extended funded industry and academic partnerships. We intend to actively pursue funding opportunities related to Medical Device Design as part of new Horizon 2020 projects.	EO'D / SR	Horizons 2020 funding application by December 2016
2.6	Courses in other institutions are heavily funded by bodies like Enterprise Ireland. We should be targeting these funding sources in order to develop research capacity and advanced training expertise in order to become the leaders in human-centred innovation within Ireland	See 1.1.1 and 1.2.1	Expression of interest submitted to Enterprise Ireland has had a positive response. We are awaiting formal proposal submission guidelines.  The department will collaborate with NCAD's commercial wing Origin8 to further develop existing Enterprise Ireland relationships to target funding opportunities.	EO'D / SR	Funding opportunities sourced by Dec 2015 and applications submitted by specified deadlines in 2016