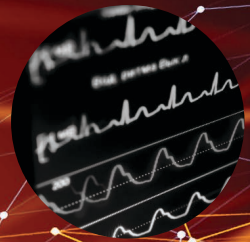




Irish Medtech
Association
SKILLNET

DESIGN FOR MEDICAL TECHNOLOGIES



Specialist Diploma in Design for Medical Technologies (NFQ Level 9)

Developed specifically to enable Researchers and Design Engineers / Technicians in the Medical Technology industry, lead and deliver platform, incremental and radical product and process design projects in their own organisation.

The **Irish Medtech Skillnet** and contracting organisation, the **Irish Medtech Association**, the Ibec group that represents the Medical Technology sector and the University of Limerick in collaboration with UCD and NCAD are delighted to present a new Specialist Diploma in Design for Medical Technologies to meet the growing requirements of Irish companies in filling product/ process design roles.

The impetus for the development of this specialist programme emerged from industry needs and content has been developed in conjunction with a taskforce comprising design experts from Irish Medtech Association's Innovation, Research, Development and Commercialisation Working Group.

Training takes place over fifteen days. Participants will demonstrate their proficiency through the delivery of an in-company design project.

Upon successful completion of the programme, participants receive an award at NFQ Level 9.



About this course



The programme will provide graduates with fundamental theoretical and practical skills, abilities and knowledge for successful medical technology design in accordance with regulatory requirements and quality management systems.

Through the use of world class design roadmaps, graduates will understand the stages of Prototype Development, Pilot Scale Systems Development, Testing and Demonstrating Results and Product Launch. Graduates will be capable of applying the appropriate tools and techniques of the latter stages of the product development process. Graduates will have an appreciation of how to apply these tools and techniques and have the ability to make a meaningful contribution to the Key Performance Indicators of their company/ organisation.

Entry Requirements

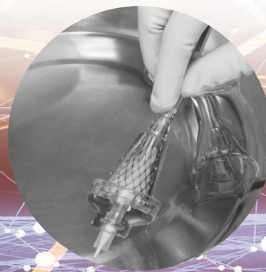
An honours level degree at a 2.2 standard and 3 to 5 years experience in the medical technology sector. The recognition of prior learning and prior experiential learning as per university policy will be applied to this course. UL's PRL policy will be applied to this course. The course board may at its discretion accept a level lower qualification with stronger evidence of prior learning and experience. Entry is decided on a case by case basis.

Applicants may be required to undertake an interview and satisfy the course admission team that they have the ability to complete and benefit from this course.

Certification

NFQ Level 9 – 36 credits

Upon completion of this programme participants would be able to build their own Masters by completing one additional specialist diploma, for example, in Innovation Management or Technology Commercialisation or others with a company based research project.



Cost

Irish Medtech Skillnet Members	€3,750
Non Members	€5,950

Delivery

Delivery will be through a blended learning approach. This will include face-to-face classroom workshops, webinars and moderated discussion boards. Material will be introduced through expert workshops and learning will be developed through prescribed readings and other activities such as case studies, simulations, online activities, computational problems and other media.

A series of tutor facilitated skills based workshops held for each module at which practical exercises and applications reinforce the learning material studied by participants in the on-line environment. This mode guides participants through material but requires them to deploy the learning in their own organisation through the delivery of an in-company project.

Assessment of students will be based on a combination of regular assignments submitted throughout the course in conjunction with delivery of a company critical design project.

Delivery Schedule

15 days

Syllabus

Module Content

Design Thinking I

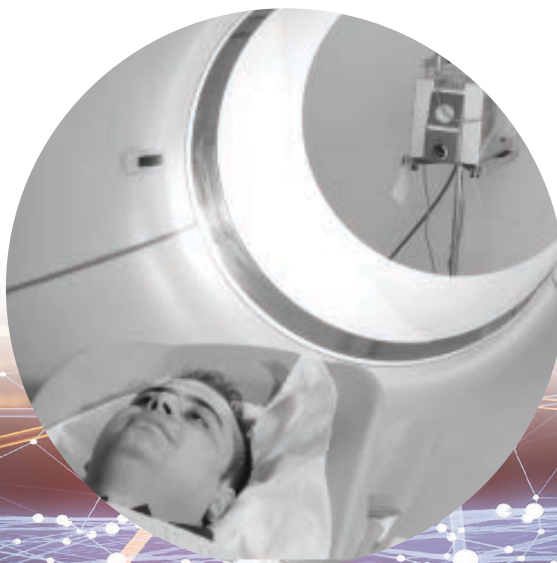
- Overview by immersion of design thinking
- Project Groundwork: Benchmarking, Observations, Interviews. Methods: Product
- Teardown / Service Critique / Journey / Persona
- Industrial Creativity: Techniques to improve your idea generation and the rationale behind them
- Very Rough Prototyping; User feedback
- Concept Presentation

Design for Six Sigma I

- Introduction to Design of Experiments /Intro to JMP 11Pro
- Analytical Statistics and the development of data collection strategies
- Process Variation and Control
- Root cause analysis approaches for the Design Engineer
- Quality Function Deployment
- Design for Manufacture/ Design for Assembly – DFX; incorporating Design for Cost, Design for Transfer, Complexity, Supply Chain, Inspection, Volume, Shipping
- The role of prototyping and testing/ the role of CAM/CAD/ CAE

Human Factors

- Design Thinking/ Empathic Design
- Life Cycle Awareness (Design/ Product)
- Human Factors Engineering (ISO 62366, HE 75)
- Patient safety and human factors
- Human Performance and multi-industry case studies
- U.S. and European Standards and FDA regulations in relation to human factors



Syllabus

Module Content

Design Thinking II

- Adding to the ToolKit of techniques for stakeholder understanding, creativity and prototyping
- Business-thinking including
 - Experience blueprint
 - Business-model canvas
 - Open innovation
 - TCO (total cost of ownership)
 - Innovation systems for organisation

Design for Six Sigma II

- Advanced Design of Experiments
- Confirmatory study design and appropriate statistical analysis
- Tolerance analysis
- Geometric Dimensioning and Tolerances
- Test Engineering for the Design Engineer
- Architecture Design and Functional Analysis (incorporating device/system function versus component Issues and DFMEA)

Guest and Industry Expert Lectures

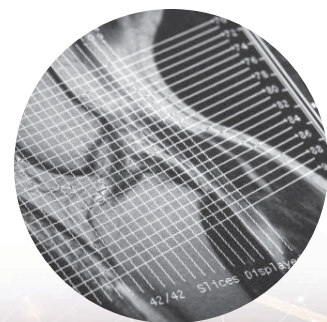
- Sensorics
- Appreciation introduction to embedded systems
- Design Engineer - Best Practice Case Studies delivered by industry

Course Location

University of Limerick

Innovation and Technology Transfer

- Introduction to knowledge/functional/patent databases
- The Expertise Infrastructure in Ireland
- Concept Development/ Concept Selection
- Technology Convergence/ Emergence



Process Improvement Projects

Process Improvement Projects

Highlights/ outcomes Class of 2015

- In-control, stable process, normally distributed, yield 98%, cost savings €147k
- Yield increase from 89% to 96%, line output increase 5%, scrap cost reduction approximately €54k, an overtime cost reduction approximately €36k
- Based on estimated sales, potential savings of approximately €980k over 3 years

Product Improvement Projects

Highlights/ outcomes Class of 2015

- Design Verification testing successfully completed in house, Performance Qualification successfully completed, Process Qualification successfully completed, secure, robust design, consistent retention, zero failures
- Scale up design, critical process parameters identified
- Working prototype delivered
- Re-design has reduced the cost of the subcomponent by 23%, 16% higher yield

Programme Team



PAUL FORTUNE

Paul is a Fellow of the Irish Ergonomics Society and Member of the international Institute of Ergonomics and Human Factors. Paul has degrees in ergonomics, materials science and design history. Paul was Head of Industrial Design for many years at the National College of Art and Design and founded the Masters degree in medical device design, together with TCD and UCD.



KEITH FINGLAS

Keith is an experienced programme manager and team leader, used to managing and delivering scopes around strategy, routine objectives and crisis situations. Keith worked initially in the Gas Turbine, Brewing and Semi-Conductor Industries but, since leaving Intel, has worked in innovation in many sectors in Ireland, including Food/Drink, Financial Services, Electronic Devices, Services and Education. Keith has a degree in Mechanical Engineering from UCD.



CHRISTIN KURJAN

Chris Kurjan is expert in "industrial creativity" and design-thinking, broadening others' skill-sets in these areas while bringing her client's next offering from concept to market. Having earned a BS in engineering at Georgia Tech and an MS from Stanford in Mechanical Engineering, she then worked at a leading international innovation and design firm, IDEO. In recent years Christin has created innovation and design-thinking curriculum for UCD and Queens University Belfast as well as Tokyo Medical and Dental University.



SEAN MOORE

Sean is a senior lecturer in Lean and Six Sigma Systems in the University of Limerick with over 27 years experience in Aerospace, Medical device and Electronics industries. Sean has a PhD in Analytical Statistics (UL), an MSc in Manufacturing and also Post Graduate Diplomas in Quality (Lean and Six Sigma) (UL) and Manufacturing (OU). Sean is a certified Black Belt and has completed two Black Belt Training programs through GE & Six Sigma Associates.



“Where design is made integral to a company’s business strategy it has been shown to consistently yield long term success eg performance of the US stock market demonstrated that, over a ten year period, design driven companies outperformed the rest of the S&P index by 228%.

DMI Design Value Index, Design Management Institute 2013

“The Design Thinking module is a powerful way of looking at early stage device design, the Design Thinking approach pushes the design engineer towards a deeper and a better understanding of the user needs, it was very well delivered and in great detail.”

Teleflex Medical

“The most useful part of the training was exposure to the early stages of the design process – through the course and also through other course participants, it was beneficial to network and gain insight across other businesses.”

Natus

“Statistical tools and methods are informative and industry applicable.”

Siemens Supervisor

Programme Enquiries

This programme can be booked online at www.irishmedtechskillnet.ie

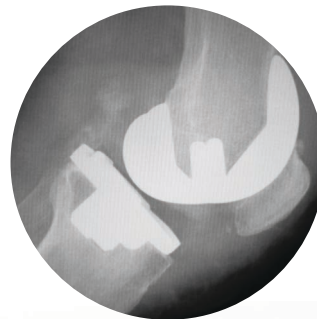
Contact:

Michelle Reinecke-Quain

Irish Medtech Skillnet Executive

Gardner House, Bank Place, Charlotte Quay, Limerick.

T: 061-431802 E: Michelle.Reinecke-Quain@ibec.ie





IRISH MEDTECH SKILLNET

Gardner House, Bank Place, Charlotte Quay, Limerick

PHONE + 353 (0)61 431802 EMAIL michelle.reinecke-quain@ibec.ie

www.irishmedtechskillnet.ie



IRISH MEDTECH ASSOCIATION

84/86 Lower Baggot Street Dublin 2

PHONE + 353 (0)1 605 1500 FAX + 353 (0)1 638 1500

EMAIL info@irishmedtechassoc.ie www.irishmedtechassoc.ie

Irish Medtech Association is a business sector within Ibec