ME (Engineering with Business)

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UCD DUBLIN

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WHY FOCUSING TOO NARROWLY IN COLLEGE COULD BACKFIRE

A job after graduation. It's what all parents want for their kids.

So, what's the smartest way to invest tuition dollars to make that happen?

The question is more complicated, and more pressing, than ever. The economy is still shaky, and many graduating students are unable to find jobs that pay well, if they can find jobs at all.

The result is that parents guiding their children through the college-application process—and college itself—have to be something like venture capitalists. They have to think through the potential returns from different paths, and pick the one that has the best chance of paying off.

For many parents and students, the most-lucrative path seems obvious: be practical. The public and private sectors are urging kids to abandon the liberal arts, and study fields where the job market is hot right now.

Schools, in turn, are responding with new, specialized courses that promise to teach skills that students will need on the job. A degree in hospital financing? Casino management? Pharmaceutical marketing?

Little wonder that business majors outnumber liberal-arts majors in the U.S. by two-to-one, and the trend is for even more focused programs targeted to niches in the labor market.

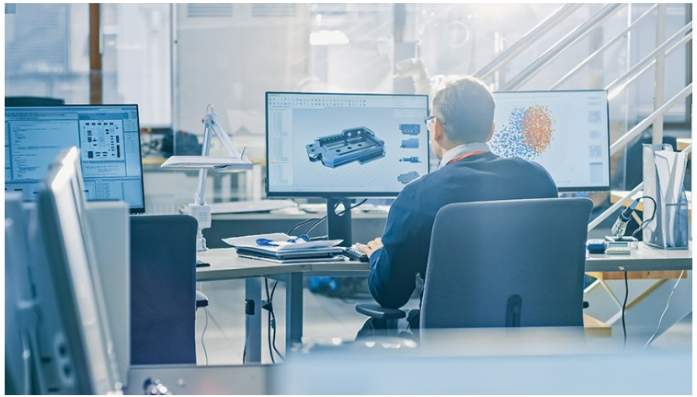
It all makes sense. Except for one thing: It probably won't work. The trouble is that nobody can predict where the jobs will be—not the employers, not the schools, not the government officials who are making such loud calls for vocational training. The economy is simply too fickle to guess way ahead of time, and any number of other changes could roil things as well. Choosing the wrong path could make things worse, not better.

Decision time: WHAT SHOULD I DO?

COMMENTARY DEFENSE CONTRACTING

Demand Grows for Multi-Skilled, Flexible Engineers

1/11/2022
By Stephanie C. Hill



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Emerging digital technologies deeply impact all aspects of society, and modern warfare is no exception.

Adversaries are growing more sophisticated — disrupting the battlefield and contesting the United States in all domains. As the threat and national security landscape rapidly change, it is imperative the defense industry ensures the nation outpaces its opponents.

To maintain a high-tech competitive advantage and influence across all domains, U.S. industry must track the evolving needs of the armed forces by understanding their challenges and equipping them with the capabilities required to deter and counter any threat.

Related Articles

Defense Industry Models Must Change to Draw New Investors

Readers Sound Off On Recent Stories

Pentagon Endorses Biometrics To Enhance Computer Security

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Related Events

Tactical Wheeled Vehicles 2/26/2024
2024 Tactical Wheeled Vehicles Conference

VIEW ALL EVENTS ▸

ME (Engineering with Business)

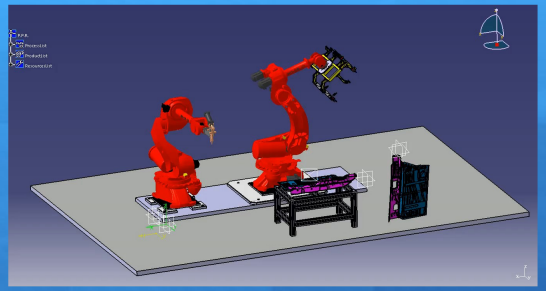
This programme is delivered in conjunction with the UCD Michael Smurfit Graduate Business School

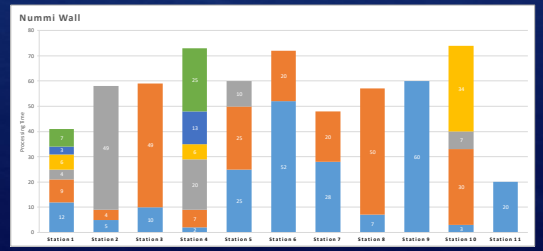
Transferable Skills - Engineering

- Analytical Thinking
- Conceptual Thinking
- Problem solving
- Planning and Organisation
- Written and oral communication
- Time management
- IT skills
- Numeracy
- Flexibility / Adaptability
- Research and information gathering
- Initiative / self-directed learning

Why Engineering with Business?

- The **ME (Engineering with Business)** is designed to produce **fully qualified engineers** who have a particular interest in **understanding the business context within which engineers usually operate**.
- The Programme engages the students in a series of **advanced digital tools and automation** (Digital Manufacturing, Robotics, Industry 4.0, ERP, Supply Chain Management)
- **The degree has been approved for full accreditation** by Engineers Ireland
- The degree is designed specifically to meet the **needs of employers across a range of engineering disciplines**.





Why Engineering with Business?

- All businesses comprise 3 elements:
  - Finance – who will fund me?
  - Marketing – who will buy?
  - Operations – how do I produce and deliver?
- Organizations need engineers to
  - Innovate ,design and develop goods and services
  - Manage capital and operational spending
  - Manage production systems
  - Implement continuous improvement

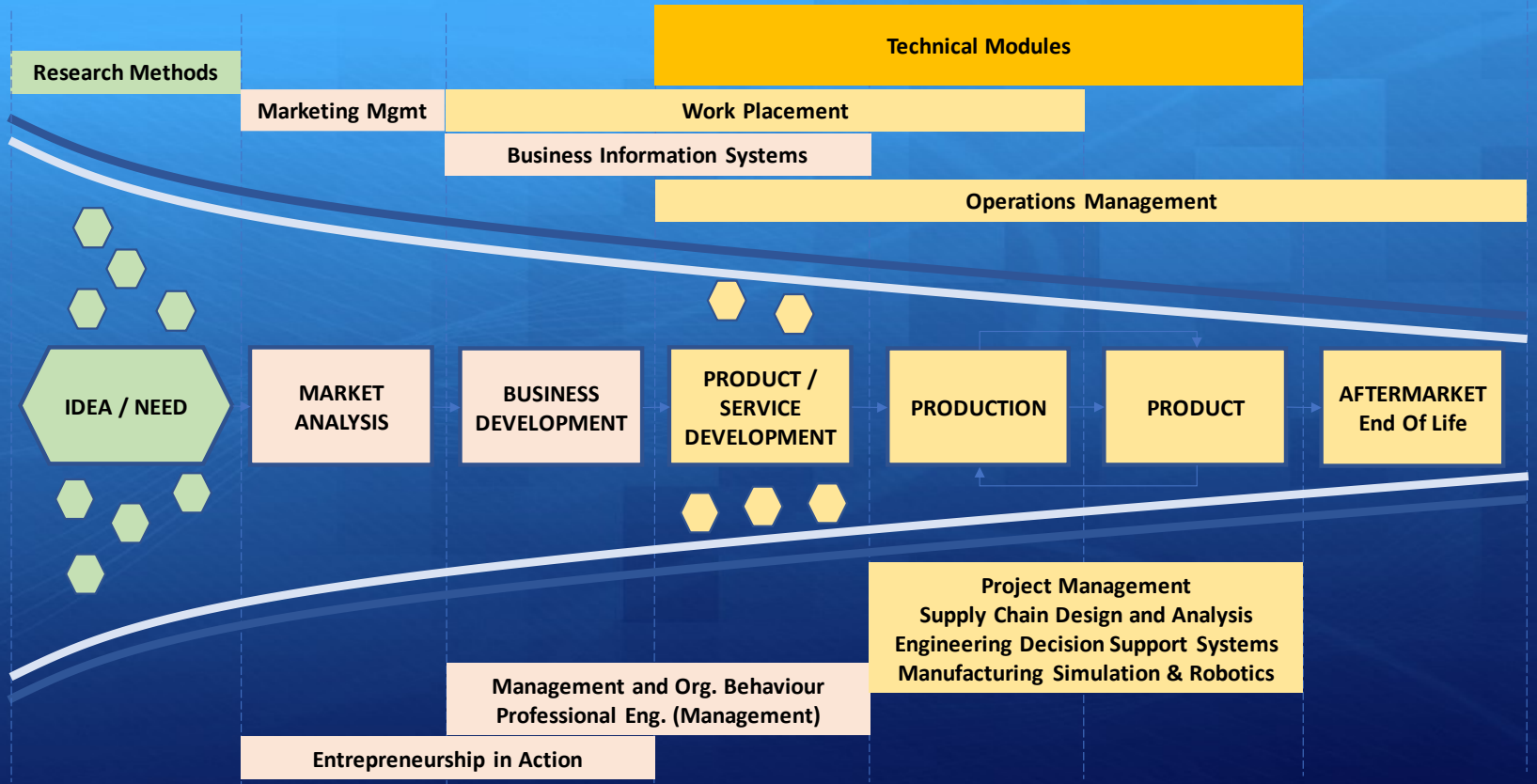
Why Engineering with Business?

- A very successful Programme:
  - About 30-35 students on average graduate every year (one of the most popular postgraduate Engineering Programmes).
  - On average, about 70% of students received a job offer before they graduated in the last academic years.
  - Very close to market, listening to what companies need.

Why Engineering with Business?

- Question from Student:
  - "I have asked some engineers and general business men about the idea of a engineering with business masters programme. A lot of replies were positive but there were others who stated 'if an employer wants an engineer they will employ an engineer' and visa versa for a business man. I know it is just one person's opinion but this has got me worried about my decision."
- ME Engineering with Business offers many technical modules (at least 30 credits). Many business modules are quite technical. At the same time, the thesis topic may be closer to an engineering subject or to a business subject or it may combine both worlds.

Programme Philosophy



Product Development as part of Enterprise Development

ME (Engineering with Business)

Civil, electrical,
electronic
or mechanical

Continuing discipline-
specific engineering subjects
30 credits

Technology management and
business subjects
50 credits

Work Placement/ Research/
Masters Project
40 credits

Entrepreneurship in Action
Marketing
Operations Management
Business Information Systems
Organisational Behaviour
Professional Engineering
Introduction to Robotics
Supply Chain Management or
Project Management or
Data Analytics for Engineers
Engineering Decision Support Systems

6 month
work placement,
research methods,
major project

ME Structure

Year 1

Trim 1

- Management and Organisational Behaviour
- Intro to Robotics
- Supply Chain Mgmt or Project Mgmt or Data Analytics
- ***Up to 3 Technical Options***

Trim 2

- Operations Management
- Entrepreneurship in Action
- Eng. Decision Support Systems
- ***Up to 3 Technical Options***

Year 2

Trim 1

- Work Placement (June to Dec)
- Masters Thesis

Trim 2

- Business Information Systems
- Marketing Management
- Professional Eng. (Mgmt)
- Masters Thesis

ME Structure

	Semester 1, Year 1 (Sept 2023)	Pre-Requisite: UCD Module Code No.	Core Credits	Option Credits	Staff (Module Co-ord)
Year 1: BUSINESS & ENGINEERING CORE Modules - all to be taken					
BMGT45710	Management and Organisational Behaviour		5		Dolores Smith Heffernan
MEEN41350	Introduction to Robotics		5		Nikolaos Papakostas
Year 1: Students MUST SELECT ONE of the following 5.0cr ENGINEERING CORE Option to be taken from list below					
MEEN40790	Supply Chain Design and Analysis			5	Vincent Hargaden
MEEN40800	Engineering Project Management			5	Pezhman Ghadimi
MEEN41330	Data Analytics for Engineers			5	Di Nguyen
Year 1: TECHNICAL OPTIONS ACCOUNTING FOR 15 CREDITS TO BE TAKEN FROM WITHIN THE ME GROUPS BELOW					
	Technical Module 1			5	
	Technical Module 2			5	
	Technical Module 3			5	
	SEMESTER CREDIT TOTALS		**10**	**20**	

	Semester 2, Year 1 (Jan 2024)	Pre-Requisite: UCD Module Code No.	Core Credits	Option Credits	Staff (Module Co-ord)
Year 1: BUSINESS & ENGINEERING CORE Modules - all to be taken					
BMGT30090	Entrepreneurship in Action		5		Orla Byrne
MEEN41090	Engineering Decision Support Systems		5		Pezhman Ghadimi
MEEN41100	Operations Management		5		Nikolaos Papakostas
Year 1 CORE if not previously taken					
MEEN30140	Professional Engineering (Finance) (must be taken here if not already taken)			5	Pezhman Ghadimi
Year 1: TWO TECHNICAL OPTIONS (10 CREDITS) TO BE TAKEN FROM WITHIN THE ME GROUPS BELOW (UNLESS MEEN 30140 Professional Engineering (Finance) already taken, then THREE (15 CREDITS))					
	Technical Module 4			5	
	Technical Module 5			5	
	Technical Module 6			5	
	SEMESTER CREDIT TOTALS		**15**	**15**	

	Semester 1, Year 2 (Sept 2023)	Pre-Requisite: UCD Module Code No.	Core Credits	Option Credits	Staff (Module Co-ord)
MEEN40930	Professional Work Placement (Autumn-Spring)		20		Nikolaos Papakostas
MEEN41080	ME Eng. with Business Thesis (Autumn-Spring)		10		Nikolaos Papakostas
	SEMESTER CREDIT TOTALS		**30**		

	Semester 2, Year 2 (Jan 2024)	Pre-Requisite: UCD Module Code No.	Core Credits	Option Credits	Staff (Module Co-ord)
MEEN40430	Professional Engineering (Management)		5		Eamonn Ahearne
MEEN41080	ME Eng. with Business Thesis (Autumn-Spring)		10		Nikolaos Papakostas
MIS40920	Business Information Systems Management ME/MEngSc		7.5		Clare Branigan
MKT40970	Marketing Management ME (Business)		7.5		Aisling Roche
	SEMESTER CREDIT TOTALS		**30**		

ME Engineering with Business

Technology Management and Business Modules (all disciplines)

- Eng. Decision Support Systems
- Intro to Robotics
- Supply Chain Management or Project Management or Data Analytics
- Operations Management
- Management & Organisational Behaviour
- Entrepreneurship in Action
- Business Information Systems
- Marketing Management
- Professional Engineering (Management)
- Research Project Thesis
- Work Placement

ME Engineering with Business – Civil Engineering

Autumn Trimester

1 Technical Core

- Case Studies

1 Technical Option

- Advanced Materials
- Civil Engineering Systems
- Geotechnics 3
- Design of Structures 2
- Applied Hydrology
- Technical Communications (online)

Spring Trimester

3 Technical Options

- Design of Structures 3
- Transport Modelling
- Water and Wastewater Treatment Processes
- Hydraulic Engineering Design
- Bridge Engineering
- Geotechnics 4
- Water, Waste & Environmental modelling
- Highway Engineering

ME Engineering with Business – Electronic Eng.

Autumn Trimester

1 Technical Core

- Control Theory

2 Technical Options

- Software Engineering
- Digital Communications
- Advanced Signal Processing
- Power Electronics Technology
- Wireless Systems

Spring Trimester

2 Technical Options

- Advances in Wireless Networking
- Data Science in Python (MD) (online)
- Neural Engineering
- Digital and Embedded Systems
- Optoelectronics

ME Engineering with Business – Electrical Eng.

Autumn Trimester

1 Technical Core

- Control Theory

2 Technical Options (indicative)

- Power System Operation
- Power Electronics and Drives
- Renewable Energy Systems
- Power Systems Dynamics and Control

Spring Trimester

2 Technical Options

- Data Science in Python MD (online)
- Energy Economics & Policy
- Power System Engineering
- Power System Design
- Applications of Power Electronics

ME Engineering with Business – Mechanical Eng.

Autumn Trimester

3 Technical Core

- Engineering Thermodynamics III
- Manufacturing Engineering II
- Computational Continuum Mechanics I

Spring Trimester

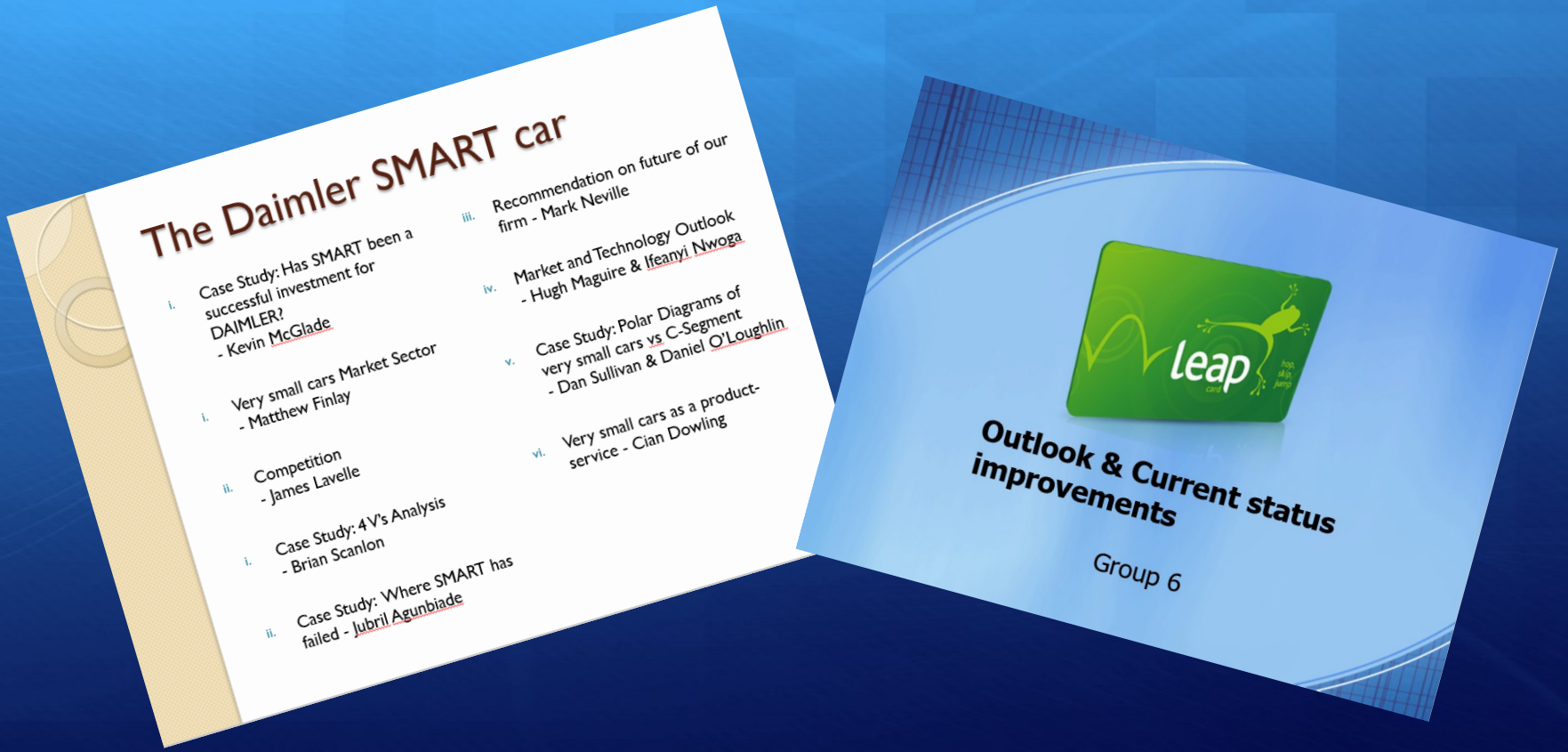
1 Technical Core

- Process Control

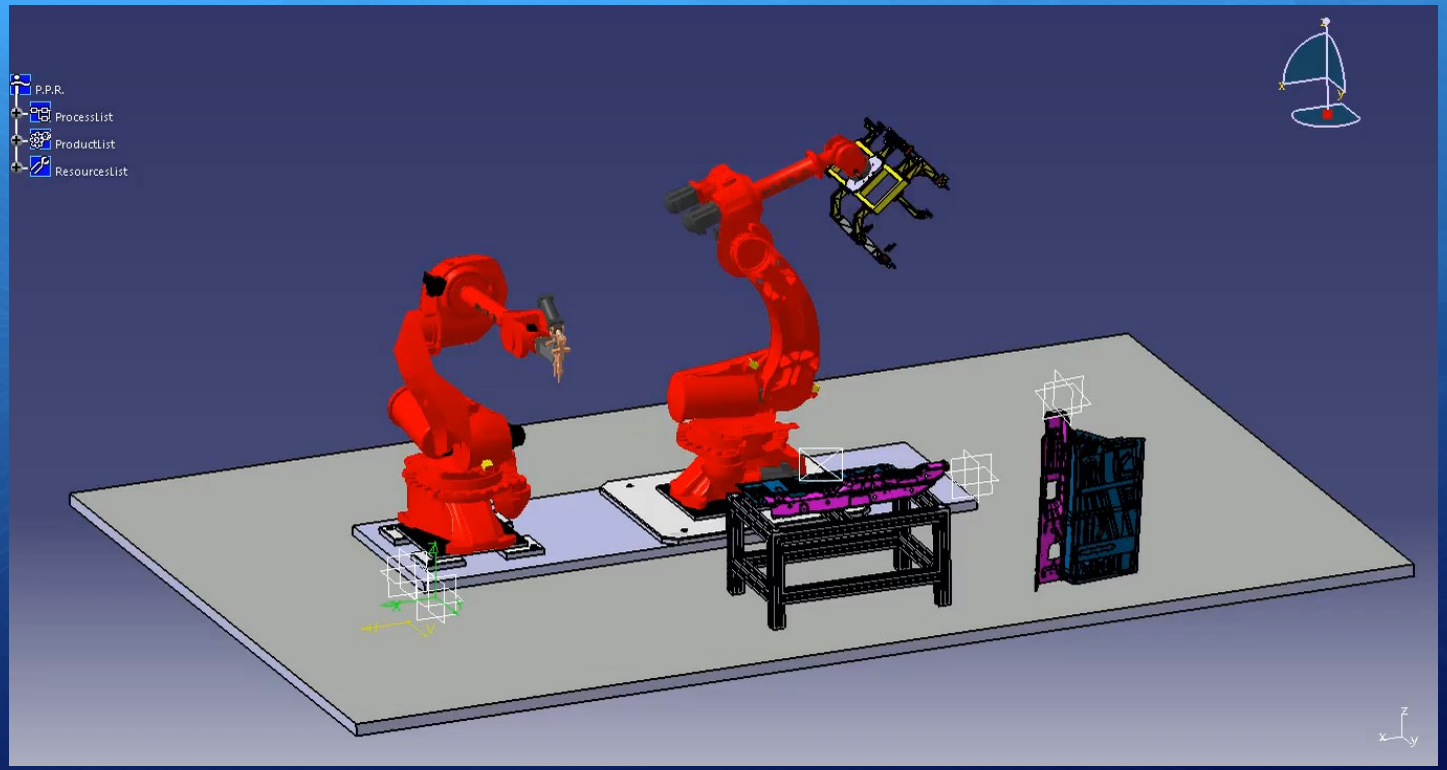
1 Technical Option

- Advanced Polymer Engineering
- Technical Communication
- Advanced Metals Processing

Students Collaborative Projects



Emphasis on state of the art digital tools

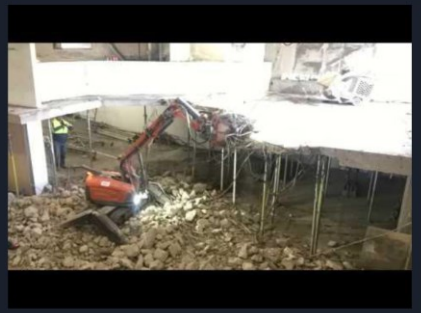


Digital automation for all engineering disciplines

Features of Construction Robots

MEEN41070 – Group 1 Assignment / 2019-20

Features of Multi-tooled Demolition Robots



ME Engineering with Business Thesis Topics

- Hydraulic and mechanical properties of biopolymer treated clay during wetting/drying cycles
- A Genetic Algorithm Approach to Batch Production Scheduling with Just-In-Time Delivery, Reduced Changeovers and Machine Downtime Considerations
- Mathematical Modelling of a system-wide strategy for the detection of Click Fraud
- Mathematical models in curbing transmission of infectious diseases
- Optimising cybersecurity defence strategies for a 3D printing production line in a medical device manufacturing company.
- Adaptive Node Immunisation using Deep Q-Learning and Experience Replay to Counter Misinformation Spread in Social Media Networks
- Impact of Dam Failures
- Simulating and monitoring machine data for anomaly detection and performance optimisation
- Medical Devices and the Circular Economy
- 3D printing flexible components of tactile sensors
- Irish plastic recycling capabilities
- Applying automation in the research lab
- Innovation in Construction: A Detailed Analysis of Drone Technology and Its Implementation
- Design Automation: Integrating Parametric Modelling and Robot Path Planning to Optimize Cycle Time
- Bio-inspired heuristic algorithms for selected engineering problems
- Optimisation of additive manufacturing process parameters considering the complexity of part (CAD) design
- Tackling the Facility Layout Problem in a Real-Life Application

ME Engineering with Business Thesis Topics

- Using discrete event simulation tools for operations management training
- Supply Chain Simulation and Visualisation for Post Disaster Analysis in Recovery Planning
- Application of Machine Learning Techniques In Quality Engineering & Control
- Establishing Competitive Green Bond Markets in Developing Countries – A Barrier Analysis
- Vehicle routing and planning for reverse logistics successful implementation and design
- Development of a Discrete Event Simulation Model to Estimate the Duration of a Micro tunnelling Project
- Supply Chain Disruption and Recovery Modelling and Analysis - a Case Study
- Sustainable Supplier Selection and Order Allocation: A TOPSIS and ε constrained approach applied to an Iranian manufacturer
- Reverse Logistics Network Design for Home Healthcare medical waste management
- Risk factor identification and prioritisation for successful implementation of a closed-loop supply chain in the medical device sector
- Developing a Framework for Decision-Making on Construction Technology
- A comparative analysis on the production and recycling processes of lithium/cobalt batteries
- Optimisation of Inventory Policies in a Multi-Tier Distribution Network
- Analysis of Shortages in Medicines Supply Chains
- People Analytics in Professional Services Firms
- The Adoption of Blockchain Technologies in Healthcare Supply Chain and Manufacturing Operations
- Big Data Analytics at JD.com

Internships

MERCK

JAGUAR

glanbia

abbvie

International
ESBI Energy Innovation

Class Poll, job after 6 years

- Business Strategy Group – Accenture (CIMA)
- Ryslon Group - Asset Management Consultant
- Mechanical Engineer - Marine Computational Services
- Engineer - Building Services Department – Arup
- Senior Market Analyst – The Market Operator – SONI / Eirgrid (PhD Elec. Eng.)
- Offshore Project Manager – Airtricity
- IT Consultant – Accenture (M. Mech. Eng. - CIMA)
- Davy - Equity Analyst – Research Department (PhD Mech. Eng.)
- Roughan & O'Donovan – Civil Engineer
- Dublin Airport Authority – Project Officer
- Macquarie Group / Infrastructure and Personal Technology - Technical Business Analyst
- CERN (Switzerland) / Engineer at SuperNode, Researching Vacuum Systems
- J.T. Magen Inc. (USA), MEP Coordinator, Data Center Construction General Contractor

Tim Cook, CEO of Apple

"Computers were not a part of high school or college life in Cook's day, coming out of Robertsdale, which he described as "a red light stop on the way to the beach." But he was an enthusiast for algebra, geometry and trigonometry: "I liked the analytical stuff. I was always taking the courses that other people hated."

His academic concentration at Auburn put him on course to his career rise. "I enjoyed the business classes, and I thought my industrial engineering degree would bridge engineering and business," Cook said. "The way I saw it, I was going to have the best of both worlds."

from Alabama native and Apple interim CEO Tim Cook shares his career history

I enjoyed the business classes, and I thought my industrial engineering degree would bridge engineering and business," Cook said. "The way I saw it, I was going to have the best of both worlds."

Broaden your skills!

"In my position as CEO of a firm employing over 80,000 engineers, I can testify that most were excellent engineers," he wrote. "But the factor that most distinguished those who advanced in the organization was the ability to think broadly and read and write clearly."

Norman Augustine, former chairman and CEO of Lockheed Martin, 2011

for more information

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