
# UCD
# Engineering Programmes

***BSc, BE, ME***

## Stage 3
## Mechanical Engineering
## Students

**Donal Finn**
**BE, MEngSc, PhD, CEng**

**28th February 2024**

**UCD School of**
**Mechanical and Materials Engineering**

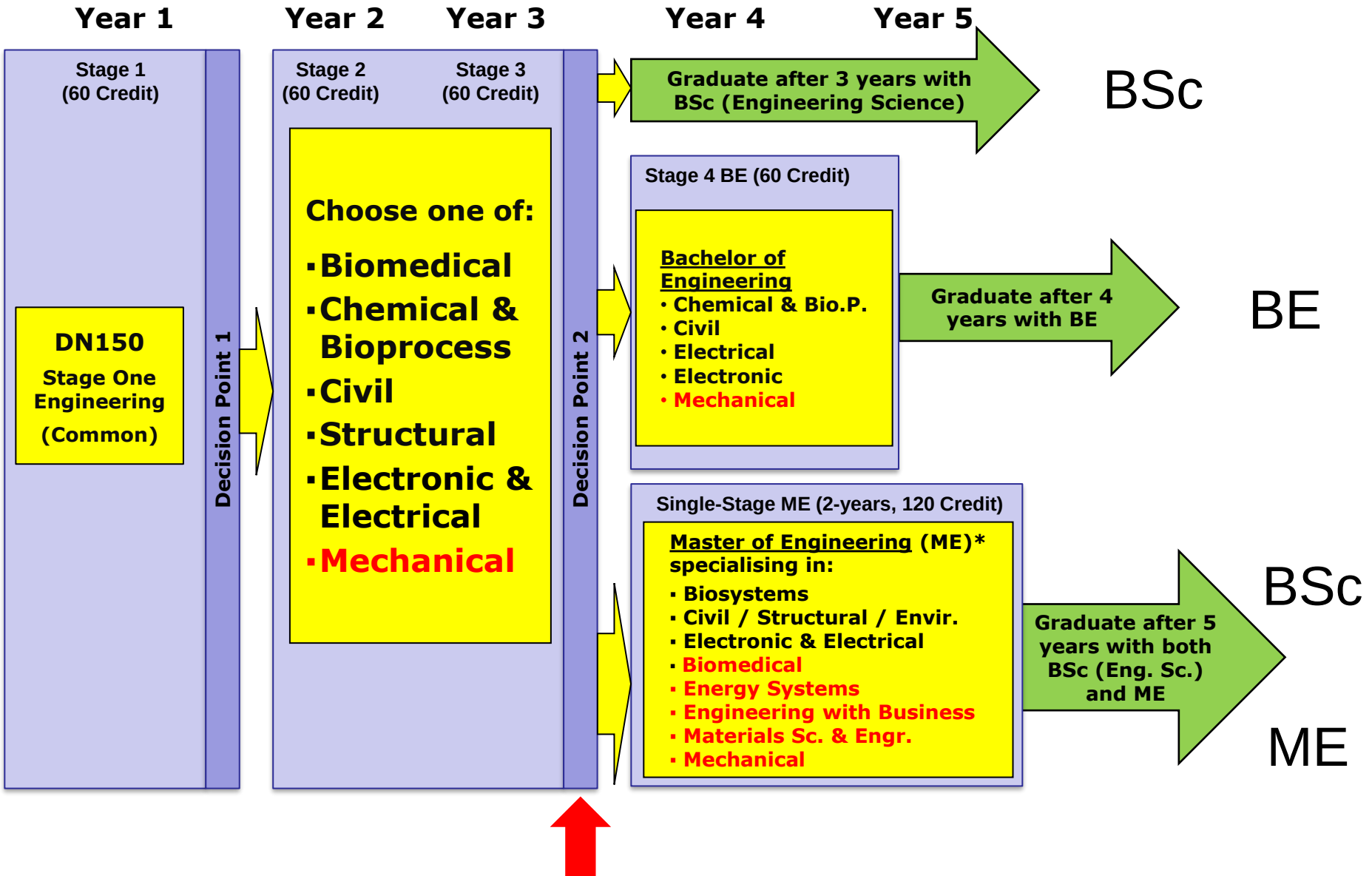
# UCD Engineering Degree Programme Pathways

## Agenda

- Context
- BSc
- BE
- ME (5 options )
- Q & A

UCD School of
Mechanical and Materials Engineering

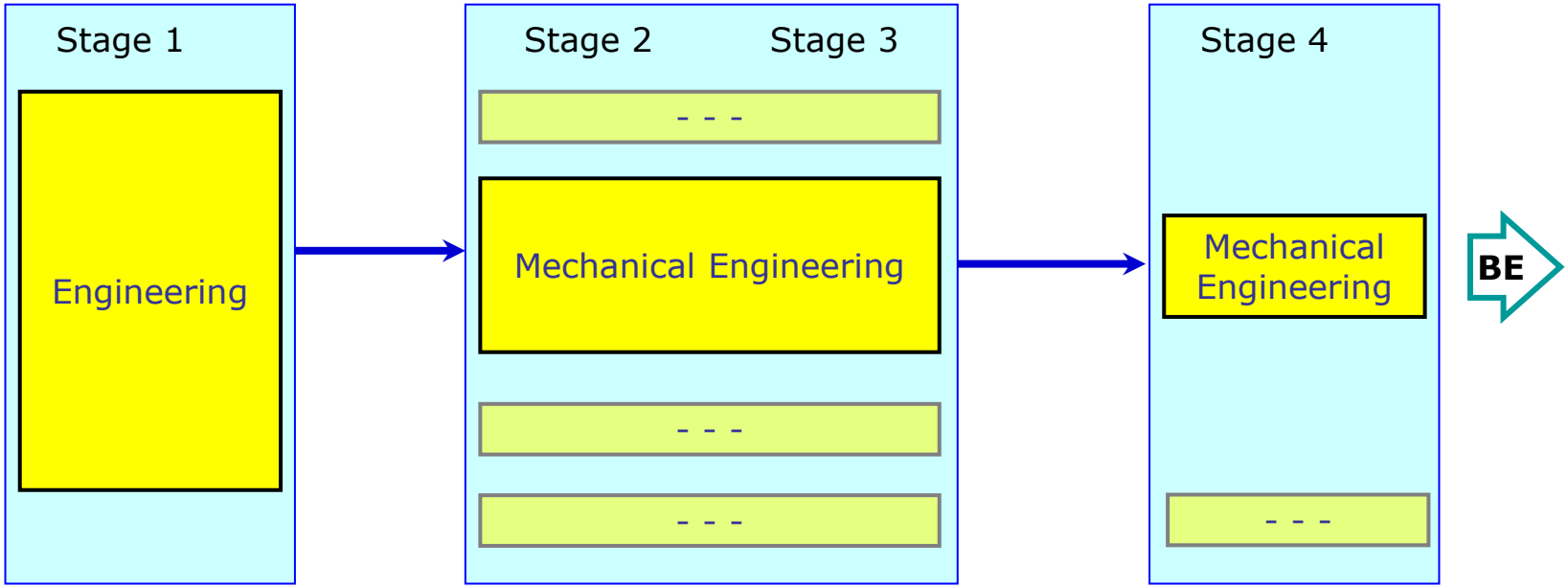
# UCD Engineering Degree Programme Pathways
# DN150



# BSc (Engineering Science) Degree

- Bachelor of Science degree  Level 8
  - 3 years, 180 credits
  - not a professional engineering qualification
  - GPA basis: 30% based on Stage 2, 70% on Stage 3
- To be compatible with European (Bologna) system:
  - *first cycle* = Bachelor degree (usually 3 years)
  - *second cycle* = Master degree (typically 2 years)
  - *third cycle* = PhD (minimum 3 years, typically 4)
  - could choose now if want ME programme in Europe…
- To provide exit from Engineering
  - provides strong technical foundation
  - to pursue career in another field
  - to continue studies in another area

# The BE Degree Programme




- You entered the BE degree programme
  - you can continue with Mechanical
  - you graduate with BE degree: 240 credits

# Bachelor of Engineering (BE) Degree

- Traditional qualification in Engineering
  - still respected in the workplace
  - accredited for MIEI
    - membership of Engineers Ireland, professional body
  - generally not sufficient for Chartered Engineer
    - further study or additional experience is needed
- Four years study in total
  - stage 4 mostly core modules, two options
  - project module – 15 credits
  - no formal work placement
- No additional barriers to progression to Stage 4
  - normal progression rules apply
  - you need 50 credits in stage 3 to progress & register for project module in stage 4

# BE - Mechanical Engineering (Stage 4)

- **Core Modules**
  - BE Project

  *Trimester 1 (T1)*
  - Mechanics of Fluids II
  - Manufacturing Engineering II
  - Data Analytics for Engineers
  - Engr. Thermodynamics III

  *Trimester 2 (T2)*
  - Advanced Metals Processing
  - Professional Engineering (Mgmt.)

  - Control Theory *(T1)*
    or
    Process Control *(T2)*

- **Option Modules (Choose 2)**
  - Energy Systems & Climate Change (*T1*)
  - Materials Thermo & Kinetics (*T1*)
  - Medical Device Design (*T1*)
  - Technical Ceramics (*T1*)
  - Computational Continuum Mech. I(*T1*)
  - Advanced Polymer Engineering *(T2)*

- BE Project (over both trimesters) = 15 credits
- 9 taught modules: 9 x 5 credits = 45 credits
- GPA basis: 30% based on Stage 3, 70% on Stage 4

https://www.ucd.ie/eacollege/study/currentstudents/engineeringstudents/understandingyourundergraduatedegreeawardcalculation/

# BE Project Module

- Project choice and allocation
  - a list of projects is proposed (Week 1, Trimester 1)
  - you choose your preferences
  - allocation according to Stage 3 GPA
  - option to propose your own project – act early (Aug)!
- Independent work through both trimesters
  - research and/or design, putting theory into practice
  - guided by supervisor – meet typically weekly
  - work in parallel with 4 or 5 taught modules
  - time management is critical
- Assessment through the year
  - milestones – literature review (Oct) & project planning (Nov)
  - interim report (Jan), final report (Apr)
  - oral presentations (end of Trimester 1 & Trimester 2)
  - interview with supervisor and second examiner

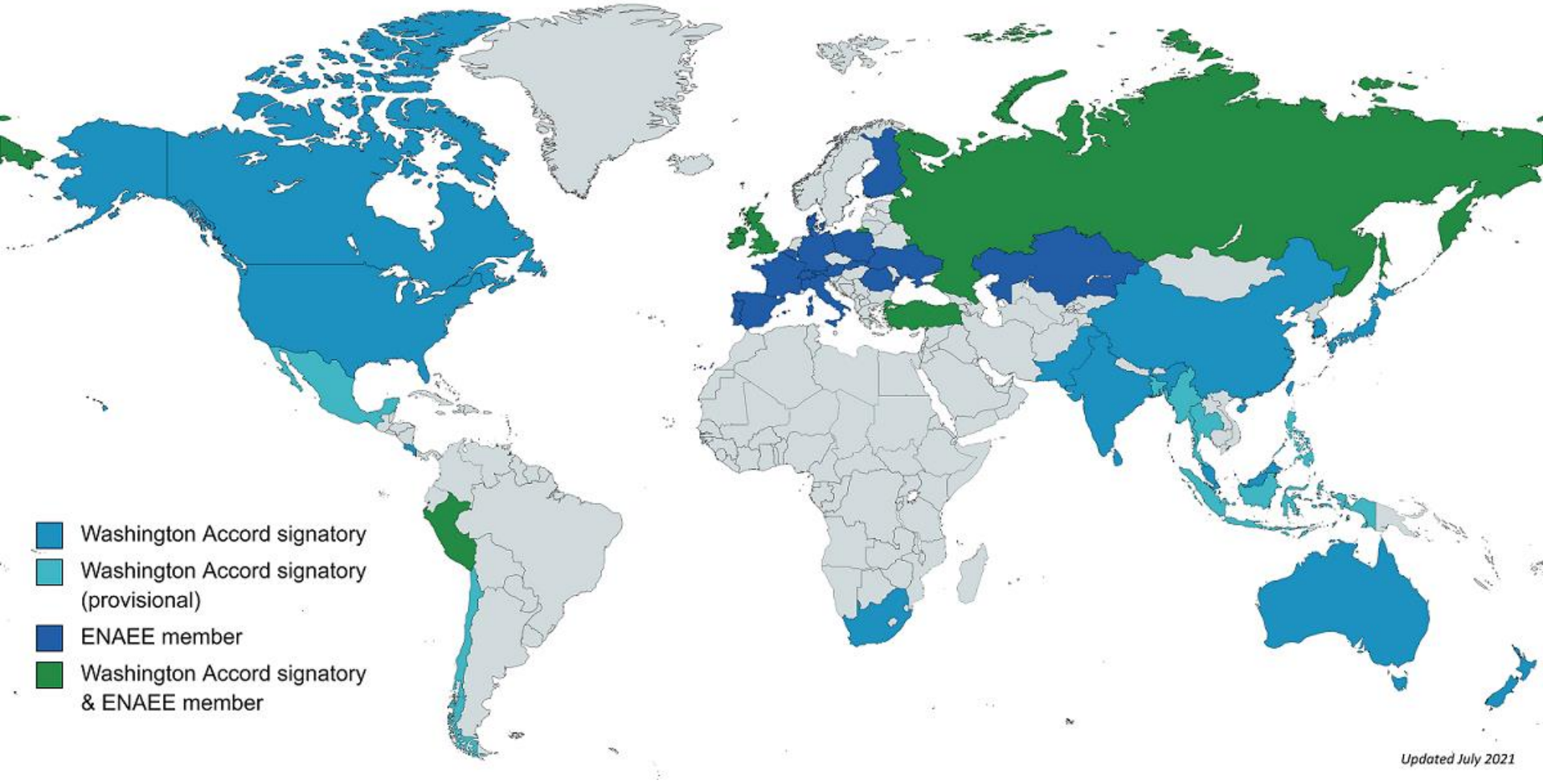
# After the BE…

- Work
  - often with further training, specific to employer
  - maybe a higher degree later in career?
- Taught Master's degree
  - in engineering or another area
  - minimum 90 credits (three trimesters or full year)
  - fees payable
- Research Master's degree
  - 1 year (3 trimesters) to 2 years
- PhD
  - typically 4 years of research & some modules
  - substantial thesis, original work
  - fees payable, but usually scholarship & stipend available

# Chartered Engineer – CEng

- Used in Ireland, UK, India, …
  - US, Canada:  PE = professional engineer
  - Australia, NZ: CPEng = chartered prof. engineer
- Registered title, protected by law
  - required by law for certain engineering activities
  - ethos in certain companies
- Awarded by professional body
  - Engineers Ireland, must also be member!
- Requirements:
  - education to suitable standard - accredited degree
    - Master's level or equivalent
  - development of competence in practice
    - minimum 4 years responsible experience
  - continuing professional development - CPD

# Engineers Ireland – International Agreements




ENAEE = European Network for Accreditation of Engineering Education

[Engineers Ireland 2024]

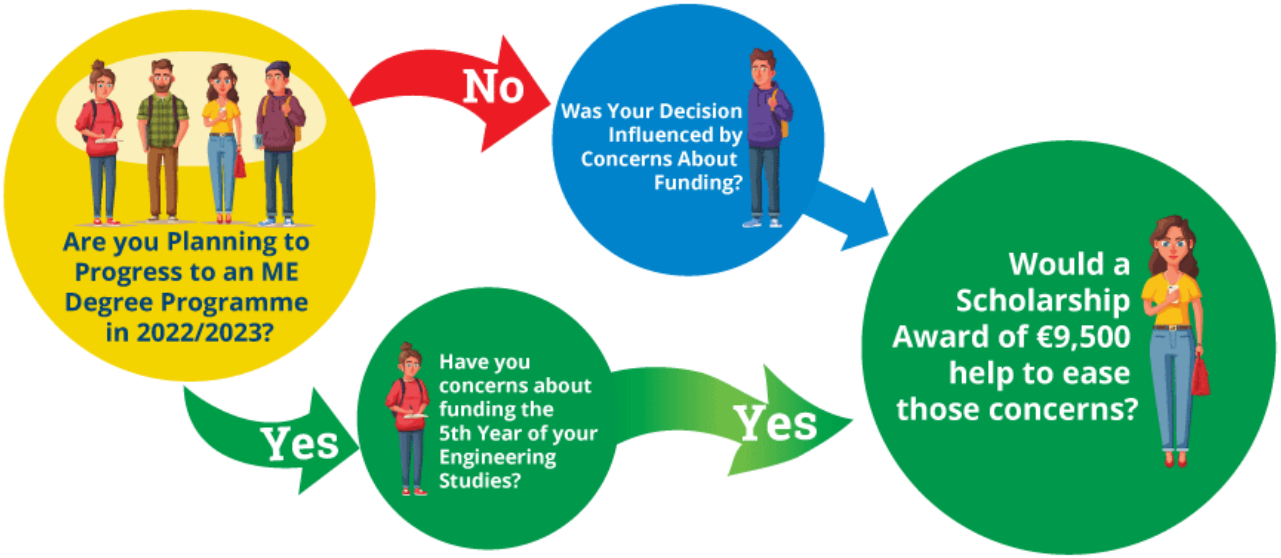
# Master of Engineering (ME) Degree

- Professional qualification
  - level required to become Chartered Engineer
  - level expected in most of Europe
- Two years of specialised study in chosen field
  - making five years in total
  - includes work placement (6-8 months)
  - includes major project at Master's level (20 or 25 credits)
- Entry requirement
  - based on stages 2 and 3, weighted 3 and 7
  - currently, minimum GPA 2.8 (equivalent to C grade)
  - GPA of 2.8 or higher recommended!
    - no easy way back to BE - if finding ME too hard…

# Master of Engineering (ME) Degree

- Full tuition fees payable for students registered for ME
  - currently €9300 - EU students
  - "Student Contribution" (€2000) only applies to bachelor degree years.
- Details…
  - Register as Engineering Science undergraduate student in September 2024, until end of Year 1
    - take modules appropriate to your chosen ME pathway
    - then graduate with BSc degree at the end of Year 1
  - Enter ME programme formally in September of Year 2
    - use surplus credits from Stage 4 of BSc
    - complete ME in 1 added year
    - pay ME tuition fees for final year.

# Master of Engineering (ME) Degree
# Réalta Scholarships




**Make an application for 1 of the 20 Réalta Scholarships for <u>Stage 3 Engineering Students</u>**

- Year 5
- €9500 bursary – payable in Year 5
- Application in May 2024
- Awards in August 2024

# Master of Engineering (ME) Degree
# ATA Réalta Scholarship

Awarded to a Stage 3 Mechanical Engineering student in order to provide funding for the fifth year of a ME degree programme

Targeted to students who might be uncertain about their ability to fund the fifth, fee-paying year would be encouraged to progress into and complete the ME programme

Applicants must intend to pursue a Masters in Engineering in one of the following areas:

Mechanical Engineering

Materials Science and Engineering, and,

Engineering with Business (Mechanical)

This award comprises 3 elements:

Payment of the relevant year's EU Fees

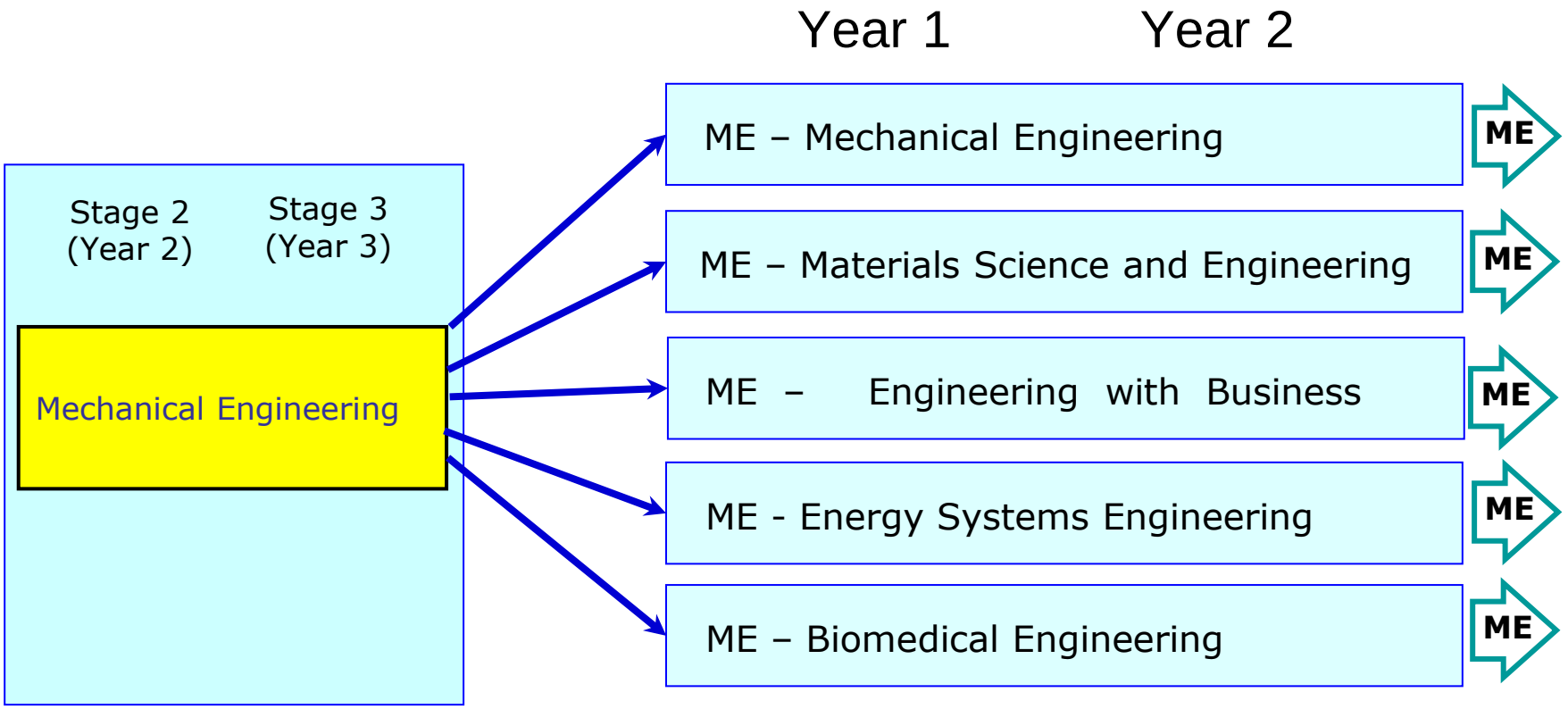
An allowance of €5,500 to contribute to living expenses

An accommodation bursary of €11,000 in relation to support for accommodation

# Master of Engineering (ME) Degree

- Work Placement
  - 30 credit, 6-8 months, Trimester 2, Yr 1 (Jan-July)
    - replaces entire spring trimester
    - ME Eng. with Business - May to Dec, Trimester 1, Yr 2
  - UCD helps to arrange placements
    - each student picks 3 to 4 companies from list of employers
    - CVs sent to companies, meetings/interviews in Oct. and Nov.
    - you may propose your own placement, through UCD
  - Alternative: 10 credit 2-3 months (Jun-Aug)
    - take additional 4 modules in Year 2 of ME
- ME (Mech, Materials, Energy*) Project
  - runs through two trimesters (Sept-Apr)
  - 25 credits, (*20 for ME (Energy), 20 for ME Eng. w/Bus.)
  - but expect Master's level work …

# Available ME Routes



# Summary - Your Options

- Graduate with BSc (Eng.Sci.) in 2024 (Aug/Sept)
  - for work or further study
    - e.g., ME in Europe or qualification in a different field
  - not a professional Engineer
- Continue in BE(Mech) programme
  - graduate in 2025 (Aug/Sept) with fully accredited degree
  - work as engineer
  - further postgraduate study is possible later
  - but further master qualification/experience needed for C.Eng
- Continue towards ME in UCD (if eligible)
  - graduate in 2026 (Aug/Sept) with fully accredited degree

- Decision required by Friday 12th, April, 2024
  - Online submission to UCD College Office

# Decision Time !

- Online form - to be completed by Friday, 12th April, 2024
  - continue in BE **(default)**
  - transfer to stage 4 Engineering Science
    - specify which ME programme
    - conditional on GPA – automatic fall-back to BE
  - graduate with BSc (Engineering Science) now
    - needs 180 credits at appropriate levels
      - (Max credits @ Level 1 modules = 80 credits)

- More information?
  - talk to relevant programme directors

# ME Programme Talks

| | | | | |
|---|---|---|---|---|
| ME Biomedical Engineering | **Wednesday 28 February** | 3-3.50pm | **Room 326** Engineering & Material Science Centre | Professor Madeleine Lowery<br>Dr Eoin O'Cearbhaill |
| ME Materials Science and Engineering | **Thursday 29 February** | 1-1.50pm | **Room 216** Engineering & Material Science Centre | Dr Mert Celikin |
| ME Engineering with Business | **Tuesday 5 March** | 1-1.50pm | **Room 234** Engineering & Material Science Centre | Assoc Professor Nikolaos Papakostas |
| ME Energy Systems Engineering | **Thursday 7 March** | 1-1.50pm | **Room 326** Engineering & Material Science Centre | Dr James O'Donnell |
| ME Mechanical Engineering | **Friday 8 March** | 1-1.50pm | **Room 326** Engineering & Material Science Centre | Dr Malachy O'Rourke |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