

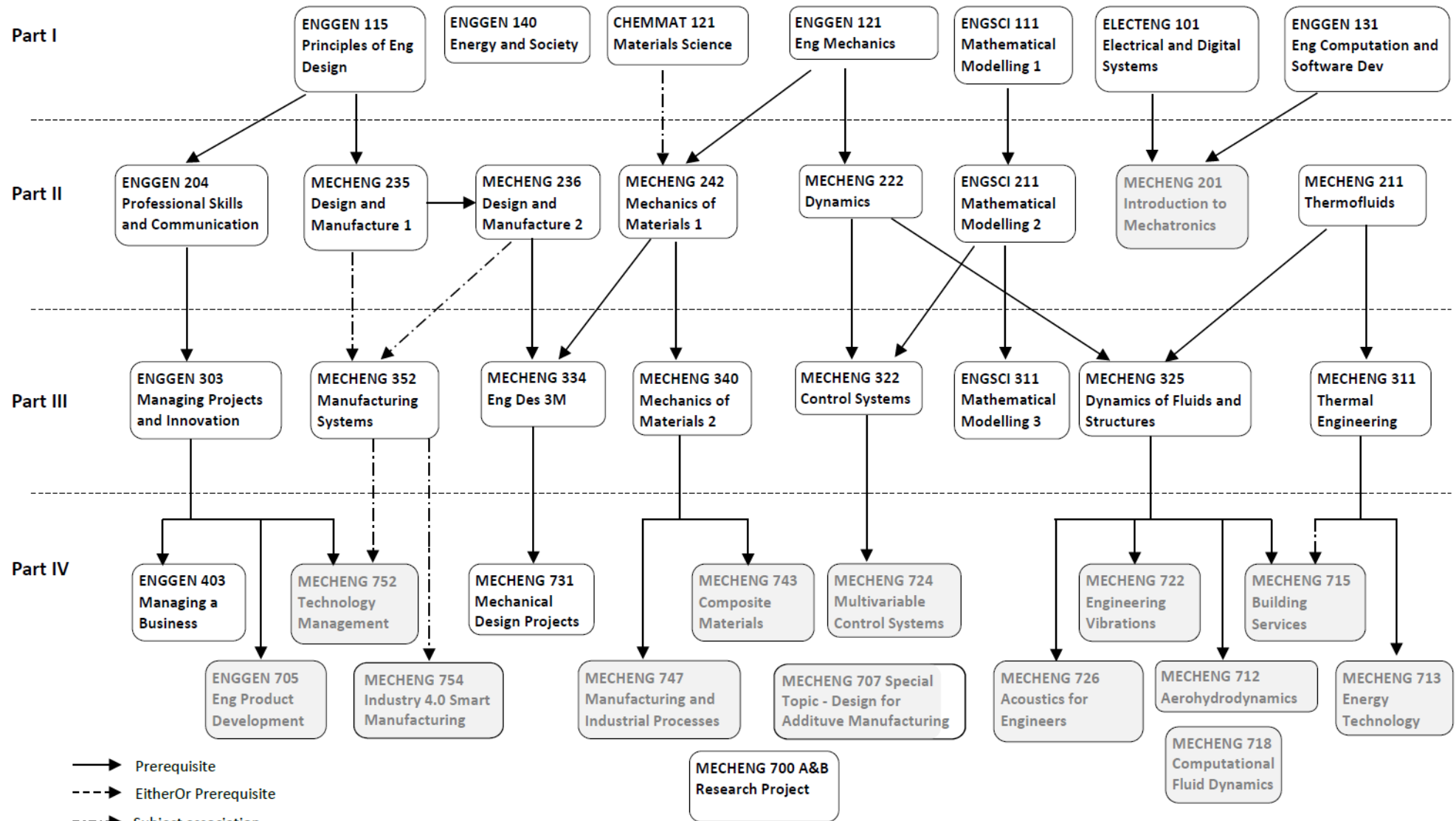
MECHENG 754

**Industry 4.0 Smart Manufacturing
(2022)**

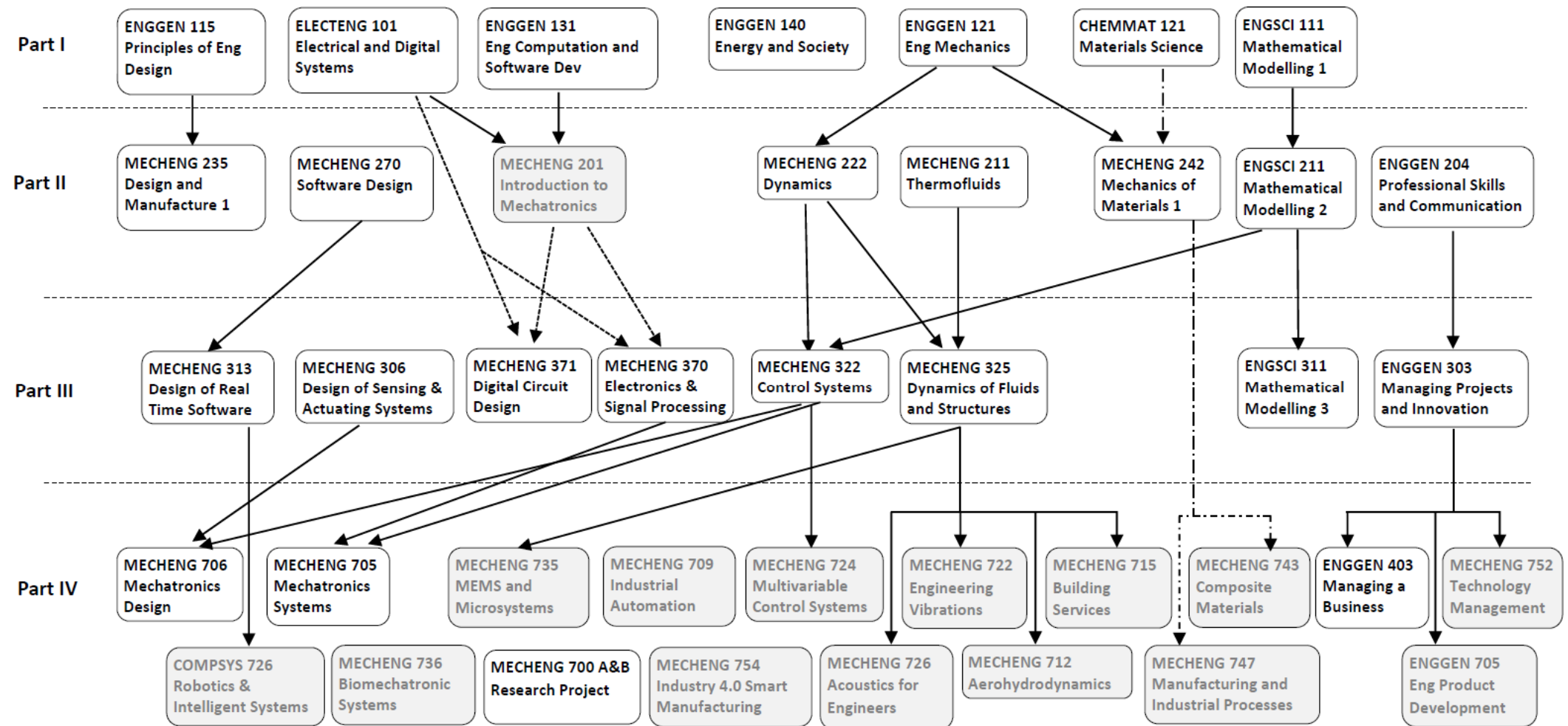
MECHENG 753

**Advanced Industry 4.0 Smart Manufacturing
(2022)**

BE(Hons) Mechanical Programme 2022



BE(Hons) Mechatronics Programme 2022



—→ Prerequisite
 - - -→ EitherOr Prerequisite
 ···→ Subject association

Elective Course



Why this elective?

Advanced Manufacturing Industry Transformation Plan



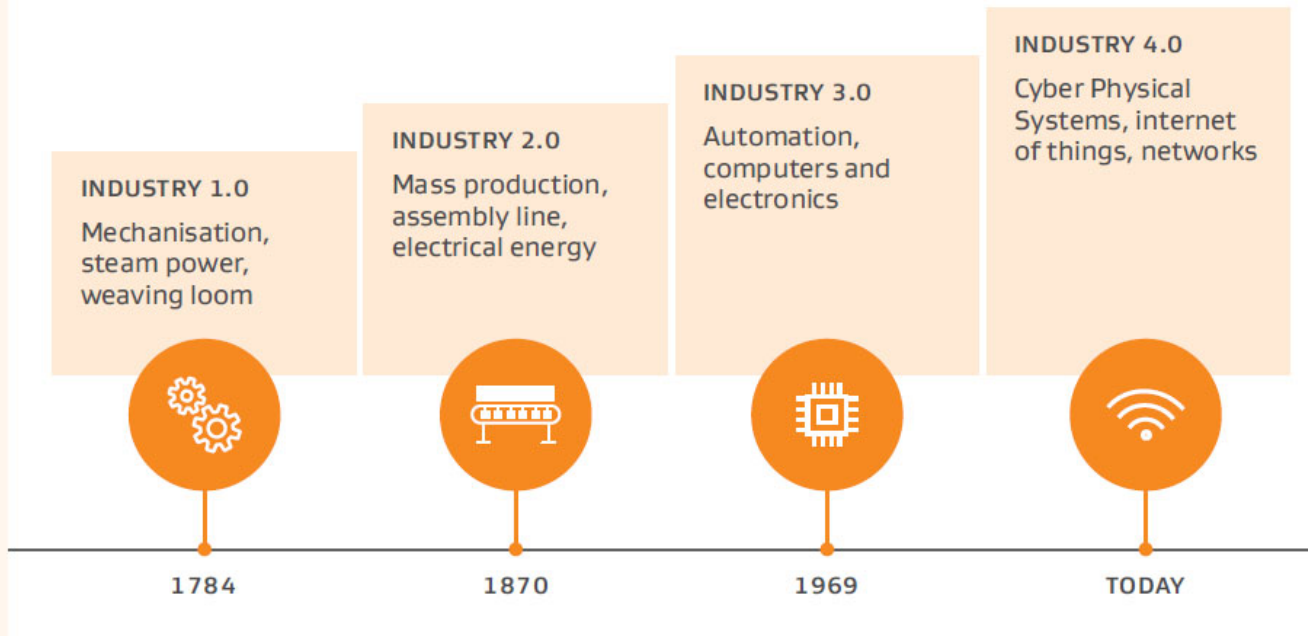
Key priorities to drive growth and transformation:

- improving understanding and perceptions of advanced manufacturing
- increasing investment in advanced technologies and processes to lift productivity and wages
- making innovation, R&D and science work for advanced manufacturing
- attracting and developing a diverse high-skilled and high-wage workforce
- creating a leading sustainable circular net-zero emissions sector
- enhancing global connectivity and opportunities

<https://www.mbie.govt.nz/have-your-say/advanced-manufacturing-industry-transformation-plan/>

INDUSTRY REVOLUTION

Transforming industries and innovation



In practice Industry 4.0 allows advanced manufacturing processes to be optimised by being digitally connected (the “internet of things”), improving use of data including sensors, incorporating automation and robotics, digital manufacturing (e.g. 3D printing and additive manufacturing), as well as digital twins, artificial intelligence and virtual reality. It is important to appreciate that it also includes advances in business and production processes, often with small changes yielding significant benefits.

GROWING INNOVATIVE INDUSTRIES IN NEW ZEALAND

Advanced Manufacturing Draft Industry Transformation Plan

CONSULTATION DRAFT
JUNE 2022



<https://www.mbie.govt.nz/have-your-say/advanced-manufacturing-industry-transformation-plan/>

An international perspective

Course	Country
Smart Manufacturing and Automation with Industry 4.0	Germany
Industry success in the era of industry 4.0	Singapore
Digital transformation and Industry 4.0	UK
Digitalization and Industry 4.0	Sweden
Digital Transformation	USA
Implementing Industry 4.0: Leading Change in Manufacturing and Operations	USA
Business Success in the Industry 4.0 Era	Australia
Industry 4.0- How to revolutionize your business	Hongkong

Course staffing

- Block 1: Industry 4.0 introduction and the fundamentals

(Xun Xu: xun.xu@)

- Block 2: Industrial Internet of Things and data analytics

(Yuqian Lu: yuqian.lu@)

- Block 3: Digital Twin technology and its applications

(Jan Polzer: jan.polzer@)

Learning Outcomes

- Understand the fundamentals of Industry 4.0 for smart manufacturing
- Understand some of the tools and models for measuring Industry 4.0 Readiness
- Gain appreciation of some specific tools for SMEs
- Demonstrate an understanding of the tools of the Industrial Internet of Things and data analytics
- Understand and apply digital twin technologies in manufacturing settings

Course details

- **Lectures:**

- Monday 5.00-6.00pm, 260-004
- Thursday 12.00-1.00pm, 260-004
- Friday 1.00-2.00pm, 260-003 (maybe used as a tutorial/discussion session)

- **Assessments:**

- MECHENG 754: 3 x assignments (20%, 20%, 15%) and exam (45%)
- MECHENG 753: 3 x assignments (20%, 20%, 15%), report (20%) and exam (25%)

- **Workload expectations**

- 15-point course
- ~ 150 hours of study: 24-36 hours of lectures + 114-126 hours of independent study

- **Challenges**

- **Student feedback** – anytime, but a.s.a.p
- **Academic integrity**
- **Course materials**