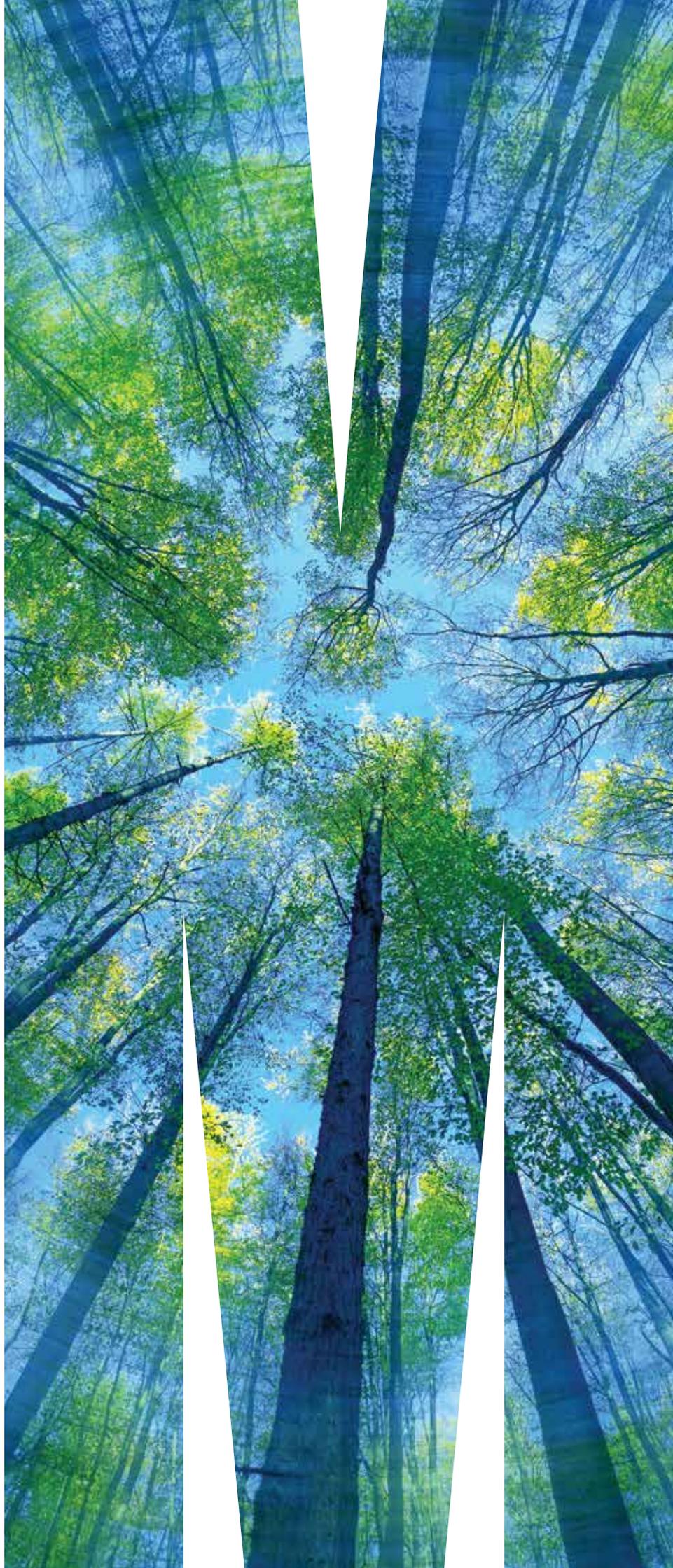




**MONASH**  
University

**MASTER OF  
BIOPRODUCT  
MANUFACTURING  
ENGINEERING**



# LEADING THE CIRCULAR BIOECONOMY

**Bioproduct manufacturing is an emerging but fast-growing industry. It looks at innovatively converting natural renewable biological resources, such as wood and crop waste, into a wide range of value-added chemicals, materials and energy. With the increasing challenges of resource scarcity and environmental pollution, there is a strong global demand for bioproduct engineers who can design sustainable and environmentally-friendly materials and energy-efficient sources.**

The Master of Bioproduct Manufacturing Engineering integrates core engineering principles with specialist topics in the field of bioresource processing. Students will gain enhanced technical and research skills and also develop entrepreneurial acumen sought by a broad range of industries, especially bio-based industries, both locally and internationally.

The course will suit engineers already working in bio-based industries and also new graduates with related qualifications who want to play a vital role in the transformative technologies for the future in the sustainable global bio-economy.

The online approach of this course will enable students to maintain their professional career whilst gaining an expert qualification.





Image courtesy of VTT

# BIOPRODUCT MANUFACTURING ENGINEERING AT MONASH

**Monash University bioproduct manufacturing engineers will be at the forefront of the circular bioeconomy.**

A qualification in bioproduct manufacturing engineering from Monash University provides you with an opportunity to pursue your passion for sustainability and innovation and be part of the growing bio futures industry.

With a diverse set of skills in applied engineering coupled with lean manufacturing, project management and entrepreneurship, bioproduct manufacturing engineers will be uniquely placed in a rapidly expanding job market.



## INDUSTRY LINKS

The Master of Bioproduct Manufacturing Engineering was established with significant support from the Australian pulp and paper industry.

The Department of Chemical Engineering and BioPRIA Bioresource Processing Institute of Australia (BioPRIA) is proud to work closely with our industry partners to deliver the Master of Bioproduct Manufacturing Engineering.

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“ We are impressed with the professional development opportunities available to our company employees through the industry-endorsed Master of Bioproduct Manufacturing Engineering and excited about the benefits the course will have to our business going forward.”

**Carlo Bigaran**  
General Manager - Build Run Repair  
Visy Pulp and Paper

# WHY STUDY BIOPRODUCT MANUFACTURING ENGINEERING

**Studying bioproduct manufacturing engineering at Monash focuses on practical solutions to industry problems.**

You will gain a unique understanding of the bio-futures industry and the emerging economic, social and environmental benefits of converting renewal bio-based resources to sustainable products.

The course equips you with skills to discover, design and develop sustainable engineering solutions to convert bioresources and waste streams into value add products such as biomaterials, bioenergy and bioproducts.

**Upon successful completion of this course, it is expected that students will be able to:**

- > Assess numerical and data analysis problems from an engineering perspective with reference to relevant social, cultural, environmental, legislative, ethical and business factors
- > Practice evidence-based entrepreneurship by formulating and testing hypotheses with potential customers to enhance internal and external business relationships
- > Design bioproduct manufacturing processes for converting a variety of biomass feedstocks into a combination of value chemicals and materials based on classical chemical reaction engineering and advanced biotechnology processes
- > Source, characterise and utilise naturally occurring biopolymers as replacements for non-renewable polymers
- > Demonstrate lean manufacturing techniques with relation to bioproduct manufacturing to ensure timely and cost-effective project delivery
- > Critically evaluate potential bioproduct manufacturing opportunities and projects to provide sustainable, innovative product pathways for new and existing plants
- > Apply sound scientific and research methodologies to bioproduct manufacturing projects, while taking into account social, economic and practical engineering aspects of the operation and integration of bioproduct manufacturing processes.

## LEARN ONLINE



### Specialise in bioproduct manufacturing engineering

It is the first online masters degree in engineering to be offered by Monash University, allowing you to continue to work professionally throughout your enrolment.



### Complete a work relevant project

You will plan, undertake and report on a two-semester long work relevant project focussed on a topic of your choosing in the bioproduct engineering field.



### Study where you like

Units are delivered online. There are no classes to attend.



### Study when it suits you

Combine full time work with part time study as you accelerate your career. This will empower you to work at your own pace for parts of the course within the context of a structured program.

“This course has helped me realise the potential for the pulp and paper industry to produce sustainable, high value bio-products and has helped me develop valuable connections with other students from across the industry.”

**Deanne Heier**  
**Scientist**

Customer Product & Technical Support  
& Business Development Support  
Norske Skog Australasia

# COURSE DETAILS

|                        |   |
|------------------------|---|
| <b>Location:</b>       | Clayton (Online)                                  |
| <b>Course code:</b>    | E6007   |
| <b>Duration:</b>       | 2 years part time                                 |
| <b>Enrolment:</b>      | First intake July each year                       |
| <b>Degree awarded:</b> | Master of Bioproduct<br>Manufacturing Engineering |

The course comprises 48 points of core units structured into three parts:

## PART A: CORE (12 POINTS)

CHE5001 – Advanced engineering data analysis  
CHE5002 – Industrial entrepreneurship

## PART B: SPECIALIST UNITS (24 POINTS)

CHE5882 – Biomass and biorefineries  
CHE5886 – Advanced biopolymers  
CHE5887 – Lean manufacturing  
CHE5888 – Sustainability and innovation

## PART C: RESEARCH AND KNOWLEDGE UNITS (12 POINTS)

ENG5005 – Research methods  
ENG5006 – Research practice



## HOW TO APPLY

### International Students

This program is delivered online. International students can enrol in this program but they are not eligible for a student visa to live in Australia while they study. Students are not required to attend classes.

### English language requirements

For entry to Monash University, you must meet the minimum English language requirements: [monash.edu/admissions/english-language-requirements](http://monash.edu/admissions/english-language-requirements)

### ENQUIRES

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T: +613 99053456  
[biopria.com.au/education/masters-program](http://biopria.com.au/education/masters-program)

## ENTRY REQUIREMENTS



A four-year Australian bachelor degree or equivalent (honours or graduate diploma) in engineering, science or applied science in a cognate discipline such as chemical, materials, mechanical, physics, mathematics, biology or other related fields considered to be equivalent, with at least a 65% average; or



A three-year Australian bachelor degree or equivalent in engineering, science or applied science in a cognate discipline such as chemical, materials, physics, mathematics, biology or in other related fields considered to be equivalent, with at least a 65% average plus 3 years minimum work experience\* in the bioproduct manufacturing industry or other related industry considered to be equivalent: or



A three-year Australian bachelor degree or equivalent in engineering, science or applied science in a non-cognate discipline\*\* with at least a 65% average plus 5 years minimum work experience\* in the bioproduct manufacturing industry or other related industry considered to be equivalent.

\* Relevant work experience in process engineering and related research and development.

\*\* Applicants with a non-related discipline degree must demonstrate competency in applied maths and chemistry.

**For more information:**

**[biopria.com.au/education/masters-program](http://biopria.com.au/education/masters-program)**

Monash University reserves the right to alter information, procedures, fees and regulations contained in this document. Please check the Monash University website for updates ([monash.edu](http://monash.edu)). All information reflects prescriptions, policy and practice in force at time of publication. CRICOS Code: 00008C. May 2018.

