

Industrial Engineering and Engineering Management

BE(IE&EM) – 4 years, Caulfield campus

Also available as a double degree with Law (students move between Caulfield and Clayton campuses for this program).

What is industrial engineering and engineering management (IE&EM)?

This discipline is the engineering of modern business. It is about designing and improving the way businesses produce and supply goods and services.

IE&EM is scientific management: applying the logic, analytical problem solving and mathematical precision of engineering to the world of business processes. For example, every day Australia Post handles nearly 20 million articles. Letters are generated individually at mail boxes and in the millions by huge customers such as banks. They have to be picked up, sorted and delivered reliably and efficiently to over 9.2 million addresses.

How do you design the pick up systems, sorting arrangements and delivery systems to keep the costs down? How do you organise 35,000 employees and over 4400 retail outlets to keep the system running smoothly? It takes specialised engineering and management skills to run an industry this gigantic, complex and challenging.

Engineers in this field are responsible for managing people, finances, marketing, scheduling, production and projects. Their skills are highly flexible and they may work in any industry, for example:

- Scheduling thousands of aircraft, vehicle passenger movements.
- Organising the production of cars, foods, pharmaceuticals at the right price and quality.
- Structuring the services of banks and financial institutions to be reliable, efficient and useful.
- Tracking the movement of goods through suppliers, warehouses and supermarkets and keeping up to 40,000 different items in stock.

Industrial engineering is one of the oldest and most important branches of engineering in the world. It is the fourth largest branch of engineering employing around 9% of all engineers across the globe.

What do IE&EM graduates do?

They use mathematics, physical and engineering sciences, computer technologies, management and behavioural sciences to function as problem-solvers, innovators, managers and planners.

Typical tasks include:

- Developing mathematical models and computer simulations to help companies operate better.
- Improving processes in work teams so they operate safely and more effectively
- Designing new approaches to office automation and communications technologies
- Designing ergonomically sound tools and workstations to reduce worker stress
- Developing tools to dramatically improve manufacturing systems



Weng Chan
BE (IEEM)

IE&EM at Monash

Level two of the course introduces specialised industrial engineering units along with mathematics units.

During levels three and four, further industrial engineering units will be offered including design and computations.

At level four, students build on previous studies and are expected to complete a project thesis in which each student, or a small group of two or three, will undertake research, design or authentic involvement (industry-based) work. Appropriate electives are also offered.

Career opportunities in IE&EM

Graduates of this discipline enjoy a very wide range of employment opportunities. Half of our graduates are employed in service industries: banks, financial services, airlines and retail management. The other half work in manufacturing: automotive, aerospace, electronics, publishing, food and wines and pharmaceuticals.

Positions for which IE&EMs are ideally suited include:

- management consultants
- business systems analysts or business process engineers
- IT developers
- supply chain, logistics managers or facilities engineers
- production, process, assets or manufacturing engineers
- health and safety managers
- project managers

Originally from Macau, Weng completed his engineering degree at Monash and is currently studying for a PhD in industrial engineering and engineering management. "Graduates from industrial engineering courses are very popular in asian countries such as China, Taiwan & Hong Kong. Monash offers the only course in this area in Victoria and it had a really good academic reputation."

Weng found the practical industry based projects in his undergraduate program particularly worthwhile. "For my third year industrial project I was assigned to work for Holden and design an environmental data base system. Although it was a tough job, my system was accepted and Holden are still using my data base to keep track of waste material in order to reduce operating costs and take care of the environment." He won several awards for outstanding achievement including the prize for the most outstanding graduate in his discipline.

"Industrial engineering and engineering management is about getting the best possible results from all available resources, provided that safety, quality, time and cost constraints and clients' satisfaction are always met. It is a very challenging subject but I've always enjoyed a challenge!"