

Telecommunications, Electrical, Robotics and Biomedical Engineering

Engineering the 21st Century

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10th June 2020

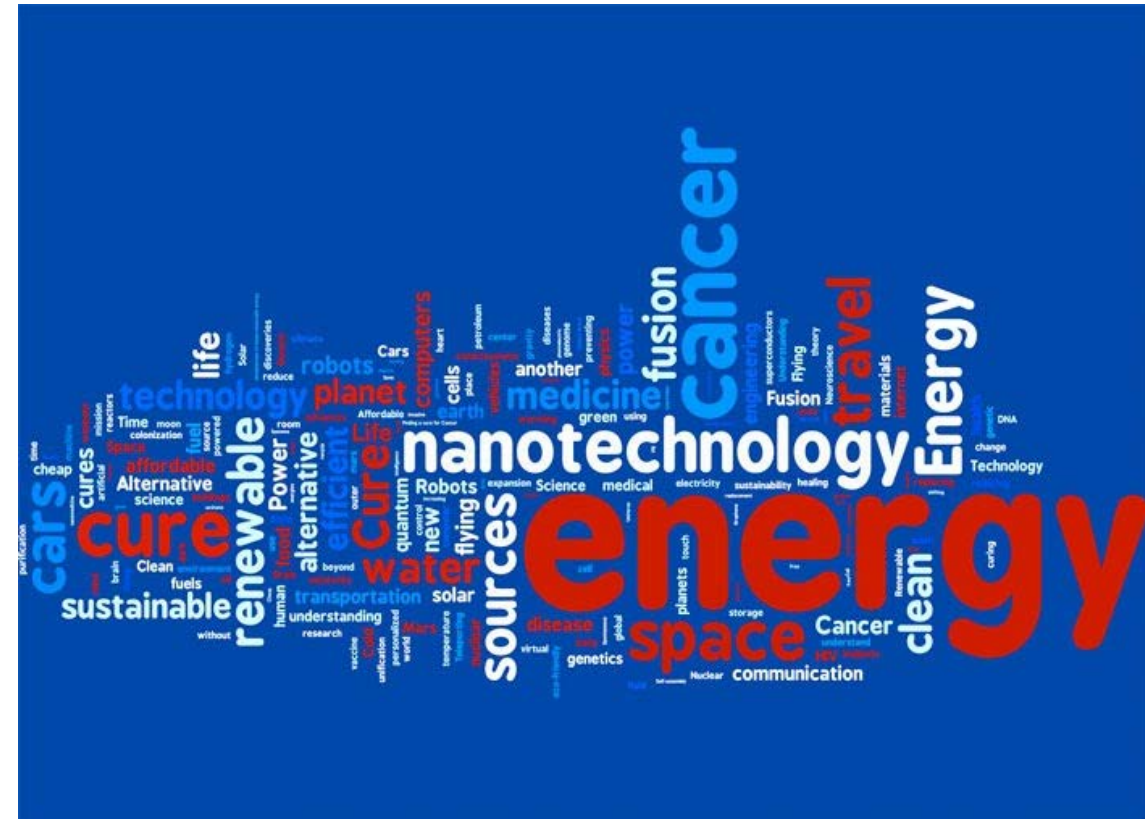


Engineering the 21st Century

Some of the Engineering Challenges of the 21st Century:

- Renewable Energy
- Industry 4.0
- Smart Cities
- Space
- Health
- Covid-19

“Engineers Make a world of difference”



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Transitioning from Fossil Fuels to Renewable Energy:

- Climate Change
- Growth in Renewables continues
- Australia has 1.5 million solar photovoltaic (PV) systems
- Many technical issues involved with the integration of renewable energy sources into the grid
- Need Electrical Engineers to develop solutions that will tackle these problems
- Projections of **6,000 job openings over 5 years¹** in Australia



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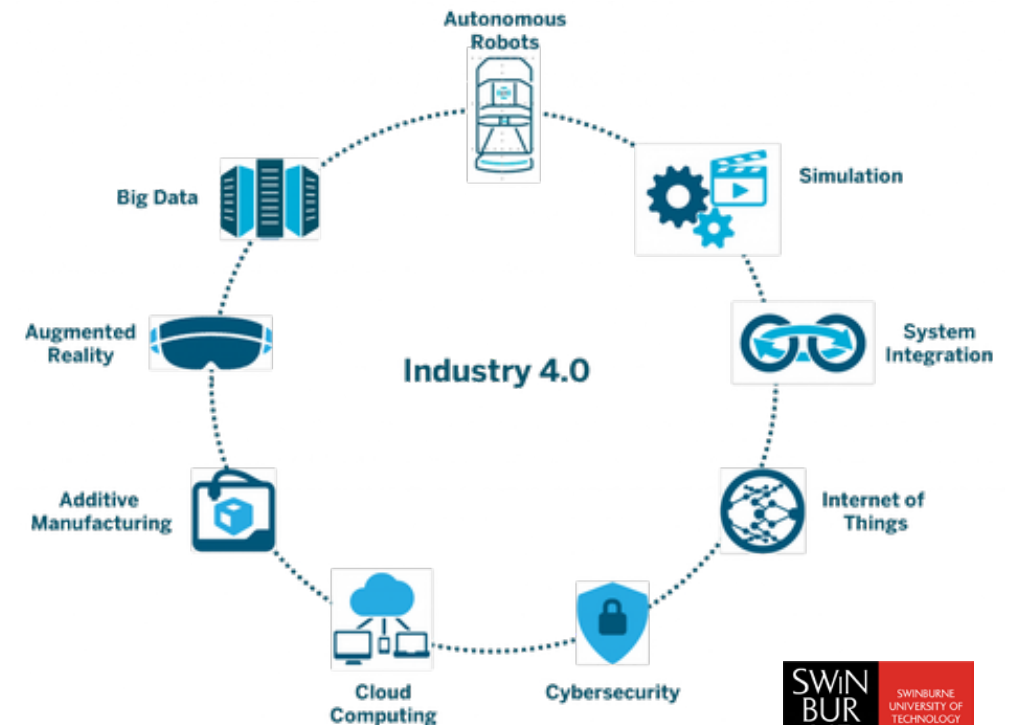
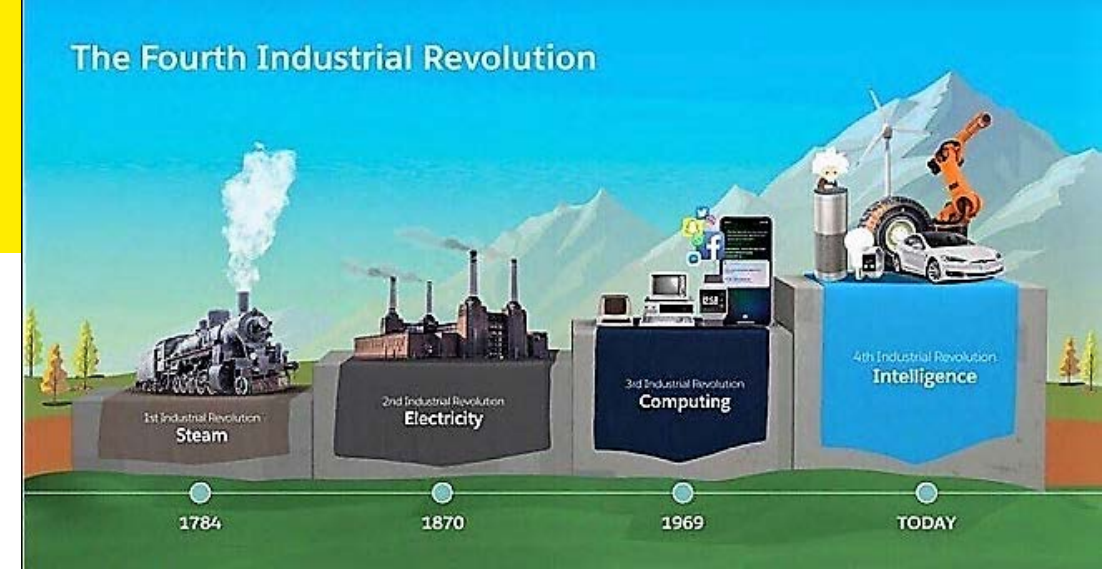
¹ <https://joboutlook.gov.au/Occupation?code=2333>

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Industry 4.0:

- Fourth Industrial Revolution
- Shift to Cyberphysical Systems and Internet of Things
- Robotics, Networks, Sensors
- Need Robotics, Telecommunications, Electronic Engineers to transform existing factories to new smart manufacturing centres
- Collaborative Robots
- Rapid Prototyping
- IoT
- Artificial Intelligence
- Swinburne & Siemens Partnership

“Engineers Make a world of difference”

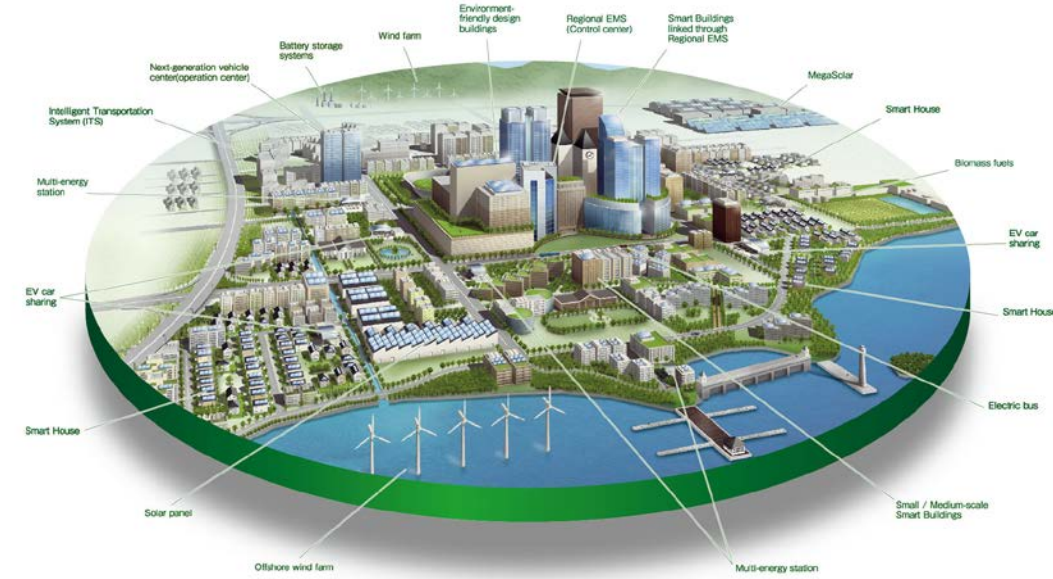


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Smart Cities:

- Cities are now home to more than 50% of the world's population
- Challenges, CO₂ Emissions, Traffic, Work
- Smart infrastructure, Intelligent Transport Systems, Communications Networks (5G), autonomous vehicles
- Need Engineers to build the infrastructure and networks that will add intelligence to cities
- Also need Engineers that understand how to collect and analyse data from sensors and deploy solutions using artificial intelligence
- Projections of **3,000 job openings over 5 years** in Australia Telecommunications



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Space:

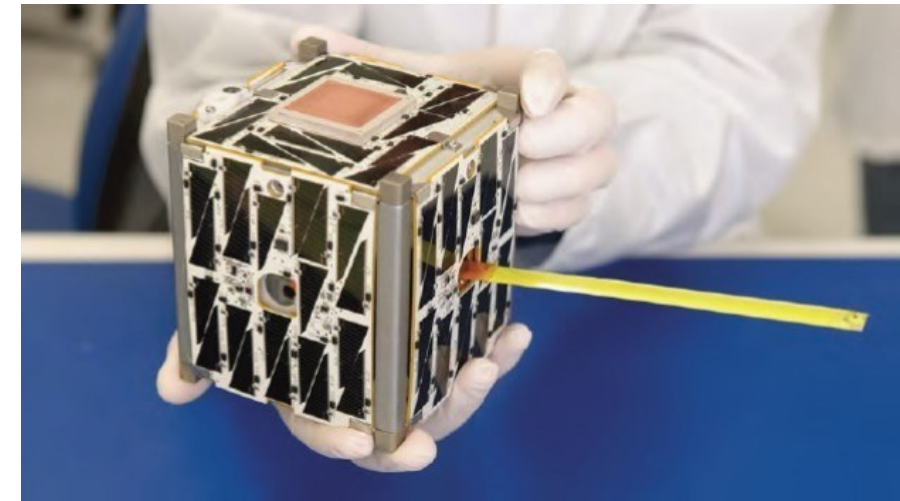
- New phase of space exploration
- Commercial Space missions
- Design and develop vehicles, systems and equipment for space travel
- Satellites
- Need Electrical/Electronic, Telecommunications, Software and Robotic Engineers to build the equipment
- Also need Engineers that understand how to collect and analyse data from sensors and deploy solutions using artificial intelligence

“Australia to triple the size of its space industry by 2030 to AU\$10–\$12 billion and increase its share of the global space sector”¹

¹ REVIEW OF AUSTRALIA’S SPACE INDUSTRY CAPABILITY Report from the Expert Reference Group for the Review MARCH 2018



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Health:

- Ageing Population
- Medical Technology
- Telehealth
- Surgical Robots
- 3D Implants
- BioRobotics
- Virtual / Augmented Reality
- Need Biomedical, Electric/Electronic, Telecommunications and Robotic Engineers

“Big companies in Australia and New Zealand such as Cochlear, ResMed and Fisher & Paykel Healthcare, along with almost 500 other small businesses in the biomedical sector, face increasing demand for their medical devices, especially in regards to our country’s ageing population.”¹

¹ <https://www.createdigital.org.au/biomedical-engineering-growth-now/>



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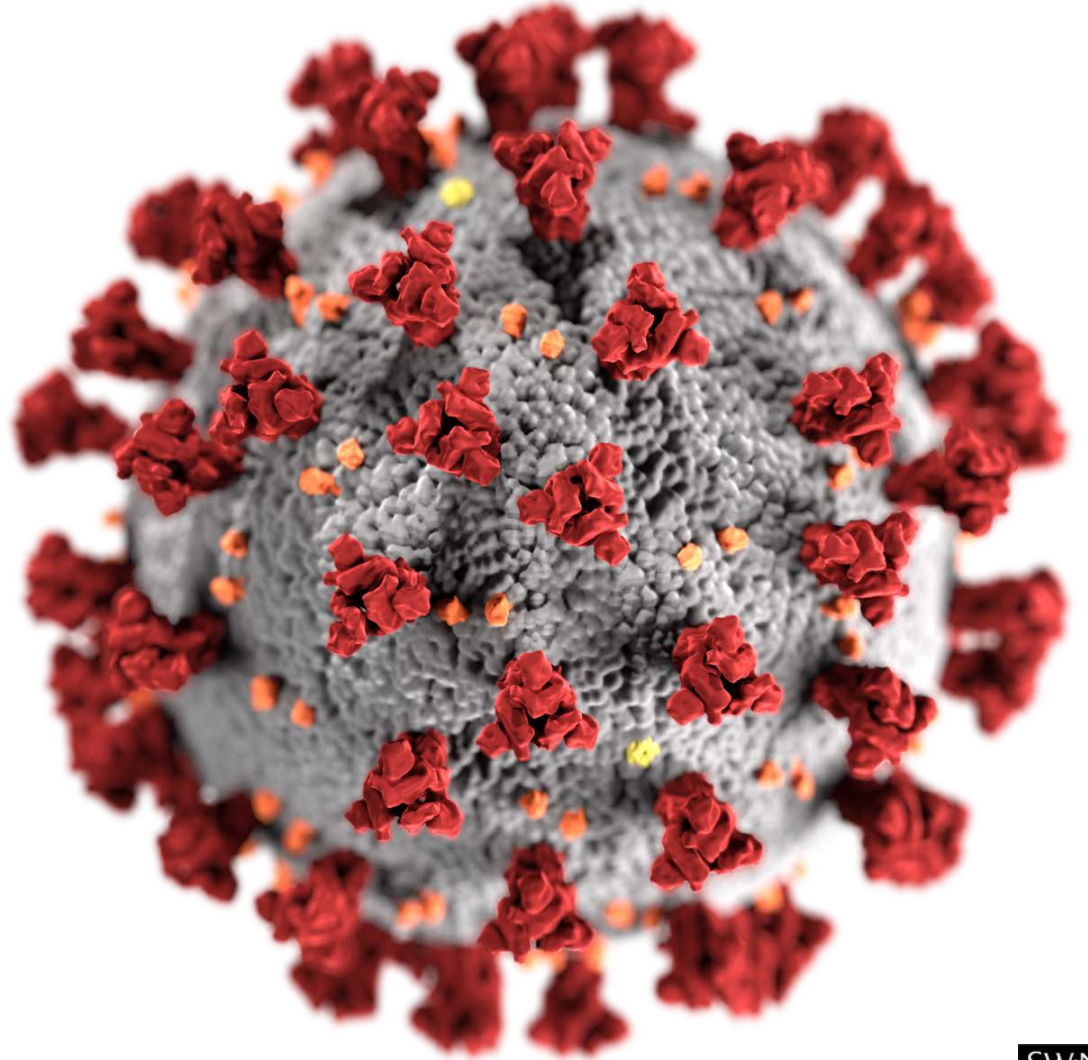


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CoVid-19:

- Global Pandemic
- Will change the way we work
- Work from Home
- Education
- What have we done at Swinburne?
 - Synchronous / asynchronous classes
 - Remote laboratories
 - Assessment
- The Future?



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Swinburne Engineering Programs:

Master Engineering Science

- Specialisations: Electrical and Electronic; Network Systems and Telecommunications

Master Science Network Systems

- Cisco & Microsoft certifications

Master of Professional Engineering

- Renewable Energy; Robotics and Mechatronics; Microelectronics

Bachelor Engineering (Honours) (Professional) & Bachelor Engineering (Honours)

- Majors: [Biomedical](#); [Electrical and Electronic](#); [Robotics and Mechatronics](#); [Software](#); [Telecommunications](#);

Why Swinburne?

- More than 50 years partnering with leading Australian and global organisations to offer students authentic workplace experiences.
- High-quality research and teaching (Highly ranked). Electrical Engineering ERA 5
- Cutting-edge facilities that enhance learning
- My opinion... It's a great University!!!



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Questions?



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