Powering Society

Engineering at Swinburne
Engineering

Civil

Mechanical

Electrical
YOU’LL KNOW
How we communicate in 2016

• Smartphones are everywhere
  – In 2014, 132 phones per 100 people in Australia
  – 64.4% market penetration

• Internet usage is normal:
  – 83% of the Australian population is on the internet
  – Average 6 hours internet usage per day (worldwide)

• All of this is underpinned by Electrical Engineering
Direct impacts

Banking
- Online/apps
- Electronic money – Bitcoins, EFTPOS

TV/Media industries
- Live streaming
- Video-on-demand
- Ultra HDTV
- Big Bash captain commentary

Mining
- Asset tracking for financial and OH&S reasons

Automotive
- Driverless cars

Marketing
- Live chat
- Digital advertising

Gadget industry
- Fitbit
- Smart phones
- Games consoles

Health industry
- Synthetic body parts
- Tele-medicine

Energy
- Solar cells
- SmartGrid
- Wind farms
Indirect impacts

- Online Security
- Online privacy and piracy
- Drones in backyards
- Synthetic body parts – usage and ethics
- Jobs we’re training students for that haven’t been thought of yet
<table>
<thead>
<tr>
<th>Occupation</th>
<th>Project employment growth – 5 years to Nov 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>6.9</td>
</tr>
<tr>
<td>Chemical and Materials Engineers</td>
<td>5.1</td>
</tr>
<tr>
<td>Civil Engineering Professionals</td>
<td>7.7</td>
</tr>
<tr>
<td>Electrical Engineers</td>
<td>8.2</td>
</tr>
<tr>
<td>Electronics Engineers</td>
<td>22.1</td>
</tr>
<tr>
<td>Industrial, Mechanical and Production Engineers</td>
<td>12.7</td>
</tr>
<tr>
<td>Mining Engineers</td>
<td>-13.3</td>
</tr>
<tr>
<td>Other Engineering Professionals</td>
<td>8.1</td>
</tr>
<tr>
<td>Construction, Production and Distribution Managers</td>
<td>9.7</td>
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<tr>
<td>Construction Managers</td>
<td>17.1</td>
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<tr>
<td>Engineering Managers</td>
<td>-10.2</td>
</tr>
<tr>
<td>Technical Sales Representatives</td>
<td>15.1</td>
</tr>
</tbody>
</table>
Industry outlook and employment prospects

• Employment for Telecommunications Engineering, Electrical Engineering to November 2017 is expected to grow strongly

• Very high proportion of full-time jobs (94.4%)

Data from joboutlook.gov.au
Employers in Melbourne

- Boeing
- Alstom
- GE
- Bosch
- Futuris
- Thales
- Australian Paper
- OneSteel
- The Royal Children's Hospital Foundation
- Australian Government Department of Defence
- Peter Mac Cancer Foundation
Internships

Djuro Mirkovic, Swinburne student
Final-year projects

Maze Mouse

Digital receipt system

Magnetic card reader
Final-year projects

Electric Motor Control with regenerative braking

Objective: Develop effective cell configuration and interconnections to yield compact medium-power battery with appropriate capacity.
Engineering student groups

- Women in Engineering
- Engineers without Borders
- Engineers Australia – Swinburne chapter
- Swinburne Tinkerer’s Guild
- Team Swinburne Formula SAE
- Young Engineers Social Club
- Swinburne 3D Printing Club
- Engineering Technical Society
- TCP/IP (Telecommunications Club)
Real-world applications

• Engineering Ball Circuit display
• NI Autonomous Robotics competition
Questions?