Learning and Teaching Academic Standards Project
Engineering and ICT
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The views expressed in this material do not necessarily reflect the views of the Australian Learning and Teaching Council or the Australian Government.
Context – TEQSA

• New Higher Education Quality and Regulatory Framework
• To regulate the sector against **agreed standards** for higher education.
• Government committed to active involvement of disciplines in defining standards.
Learning & Teaching Academic Standards Project

To define **threshold learning outcomes** for selected disciplines or programs as defined in the Australian Qualifications Framework (AQF).

http://www.altc.edu.au/standards
Gaps identified in workshops

- The ability to solve open-ended problems is quite often missing from graduates’ abilities. Thinking around roadblocks, …rarely one answer …
- Lack of appreciation in environment and sustainability; risk application in engineering/ICT
- Focus on basic principles – more emphasis on computer skills and applications
- Ability to communicate in a formal genre or in emails and reports to non-technical people; public speaking skills
- Personal traits, eg humility, drive, confidence
5 major outcomes

1. Needs, Context + Systems
   • Understand the problem

2. Problem solving and Design

3. Abstraction and Modelling

4. Coordination and communication

5. Self management
   • and reflective practice
Needs, Context and Systems

Graduates must be able to:

• Identify, interpret and analyse stakeholder needs,
• establish priorities and the goals, constraints and uncertainties of the system (social, cultural, environmental, business etc.),
• using systems thinking,
• while recognising ethical implications of professional practice.
Problem solving and Design

Graduates must be able to:

• Apply *problem solving, design and decision making methodologies* to develop components, systems and/or processes to meet specified requirements,

• including *creative approaches* to synthesise alternative solutions, concepts and procedures,

• while demonstrating *information skills*

• and *research methods*. 
Abstraction and Modelling

Graduates must be able to:

• Apply abstraction, mathematics and discipline fundamentals to analysis, design and operation,
• using appropriate computer software, laboratory equipment and other devices,
• ensuring model applicability, accuracy and limitations.
Coordination and Communication

Graduates must be able to:

• Communicate and coordinate proficiently by listening, speaking, reading and writing English for professional practice,

• working as an effective member or leader of diverse teams,

• using basic tools and practices of formal project management.
Self management

Graduates must be able to:

- *Manage own time and processes* effectively by prioritising competing demands to achieve personal and team goals,

- with *regular review of personal performance* as a primary means of managing continuing professional development (lifelong learning).
5 major outcomes

1. Needs, Context + Systems
   • Understand the problem
2. Problem solving and Design
3. Abstraction and Modelling
4. Coordination and communication
5. Self management
   • and reflective practice
Accounting

• Exercise judgement to solve routine accounting problems in a range of contexts including ... (Judgement)
• Integrate theoretical and technical knowledge of accounting and other relevant areas (Knowledge)
• Apply accounting knowledge and technical skills to routine accounting problems (Skills)
• Justify and communicate accounting advice and ideas in routine collaborative contexts (Communication and Teamwork)
• Take responsibility and be accountable for their own learning and work in a range of routine contexts (Self-Management)
Health, Medical and Veterinary Science

- Assess individual and population health status, and formulate and implement management plans.
- Promote and optimise the health and welfare of patients/clients and populations.
- Retrieve, critically evaluate, and apply evidence in the performance of health care activities.
- Deliver safe and effective health care in collaboration with other health care professionals.
- Reflect on current skills, knowledge and attitudes, and plan ongoing professional development activities.
For each outcome …

• **Where** is this outcome taught in my program?
• How do the outcomes at each **year/level** of the program **build** the final outcome?
• **How will we assess** the outcomes?
• What **evidence** will we show the accreditation agency?
## Typical evidence (Engineering)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs, Context + Systems</td>
<td>Final year design and/or research report (*)</td>
</tr>
<tr>
<td>Problem solving and Design</td>
<td>Final year design and/or research report (*)</td>
</tr>
<tr>
<td>Abstraction and Modelling</td>
<td>Academic transcript</td>
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<tr>
<td>Coordination and communication</td>
<td>Final year presentations</td>
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<tr>
<td></td>
<td>Team skills assessment (*)</td>
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<tr>
<td>Self management</td>
<td>E-portfolio (*)</td>
</tr>
</tbody>
</table>
Where to from here?

- Develop *communities of practice* around the TLOs
  - Develop ‘*best practice*’ *teaching and learning resources*
  - Promulgate best practice teaching, learning and assessment materials
  - Resources Exchange (prototype)
    - [https://sites.google.com/site/eereexchange/](https://sites.google.com/site/eereexchange/)
- Develop *rubrics* that document the required attainment
- *Design* effective curricula
- *Research* how all of these steps can be integrated to deliver a higher quality educational system
  - Opportunities for future grant applications.
Summary

• Our role has been to facilitate the discipline communities in defining and refining the threshold learning outcomes

• Identified suitable evidence of the outcomes (explored what is acceptable and not acceptable)

• Encouraged the sector to work together through shared resources and assessment tools
Thank you

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