

This appendix provides the full version of the ILOs.  
These ILOs are part of the EER.

# B

## Intended Learning Outcomes (ILOs)

The *Intended Learning Outcomes (ILOs)* are part of the [Education and Examination Regulations](#) [8] ('EER') of the programme. In Table 1.1 the ILOs are summarised. The full version of the ILOs is given in the Tables B.2 and B.2 - continued.

In Tables B.1 and B.2, the ILOs that correspond to internationalisation, are printed in *blue italics*.

### B.1 Summary of the ILOs

**Table B.1**

Summary of the Intended Learning Outcomes as mentioned in the Education and Examination Regulations ('EER')

Graduates of this programme are *globally-minded, societal problem-solvers*, who

- can trace back (or help a client trace back) a possibly ill-posed initial question to the underlying challenge,
- can generate ideas and concepts,
- can identify opportunities for the exploitation of new technologies,
- can develop ideas and concepts into key prototypes, and
- can evaluate these prototypes.

To this end, they acquire skills and knowledge in five areas:

1. Self-managing design process,
2. Understanding and use of technology,
3. *Designing for interaction, expression, impact and experience*,
4. Societal, economic and *global competences*, and
5. *Academic and professional skills*.

### B.2 ILOs in full detail

**Table B.2** Intended learning outcomes in area (1), more detailed

1. Self-managing design process

The intended learning outcomes in area (1) Self-managing design proces, are:

1. Graduates understand autonomous design, and have the skills and knowledge to act as an autonomous designer, thus
  - (a) they can identify and choose projects,
  - (b) they can explain and justify ideas in context,
  - (c) they have developed personality and a personal style.
2. Graduates understand and are skilled in creative thinking and creative acting, thus
  - (a) they know and can apply creative thinking techniques,
  - (b) they know and can apply divergent and convergent thinking,
  - (c) they know and can apply tinkering.
3. Graduates understand and have the knowledge to employ multidisciplinary design methods, thus
  - (a) they understand and can apply phasing in the systematic design process,
  - (b) they understand and can apply demand driven and explorative design,
  - (c) they can design in a team, and invoke help of experts,
  - (d) they have the knowledge and skills to document and report,
  - (e) they have the knowledge and skills to incorporate the user in the design process,
  - (f) they have the knowledge and skills to evaluate design options and take design decisions.

**Table B.2 - continued** Intended learning outcomes in area (2), (3), (4) and (5), more detailed

2. Understanding and use of technology	<p>The intended learning outcomes in the area (2) Understanding and use of technology are:</p> <p>4. Graduates understand and can use technology in the following domains:</p> <ul style="list-style-type: none"> <li>(a) programming, algorithms, frameworks &amp; protocols,</li> <li>(b) web technology, web services and data management,</li> <li>(c) dynamic behaviour of physical systems, (especially in the electrical domain),</li> <li>(d) physical computing, sensing, physical (user) interaction,</li> <li>(e) (Internet) network technology and protocols.</li> </ul> <p>5. Graduates can rely on a basic knowledge of physics, mathematics and engineering in support of their understanding and use of technology.</p>
3. Designing for interaction, expression, impact and experience	<p>The intended learning outcomes in the area (3) Designing for interaction, expression, impact and experience are:</p> <p>6. The graduates understand and can use expressive technology, thus</p> <ul style="list-style-type: none"> <li>(a) they have knowledge and skills in expressive media, like still and moving images, sound and 3d-modelling,</li> <li>(b) they have knowledge and skills in storytelling, story worlds, and <b>messaging to various (international) audiences</b>.</li> </ul> <p>7. The graduates</p> <ul style="list-style-type: none"> <li>(a) have knowledge of and can investigate human technology relationships and human design relationships,</li> <li>(b) <b>are familiar</b> with arts and <b>culture</b>,</li> <li>(c) <b>are aware of intercultural differences</b>,</li> <li>(d) <b>are aware of human factors, and of social patterns and societal structures</b>.</li> </ul>
4. Societal and economic value	<p>The intended learning outcomes in the area (4) <b>Societal, economic, and global competences</b> are</p> <p>8. The graduates have knowledge and skills to bring creative technology to the market, thus</p> <ul style="list-style-type: none"> <li>(a) they have the knowledge to perform a market analysis in <b>international markets</b>,</li> <li>(b) they are familiar with attracting capital and financing,</li> <li>(c) they understand intellectual property rights,</li> <li>(d) they can write a business plan.</li> </ul> <p>9. Graduates are aware of the roles of designers in society, and the standards (ethically and legally) for professional behaviour.</p>
5. Academic and professional skills	<p>The intended learning outcomes in the area (5) Academic and professional skills are:</p> <p>10. Graduates can communicate with experts and non-experts about all aspects of their field, this communication covers:</p> <ul style="list-style-type: none"> <li>(a) presentation,</li> <li>(b) justification,</li> <li>(c) documentation,</li> <li>(d) scientific debate,</li> <li>(e) in this communication the graduate knows how to employ modern media.</li> </ul> <p>In this communication the graduate knows how to employ modern media.</p> <p>11. Graduates are:</p> <ul style="list-style-type: none"> <li>(a) capable of logical reasoning,</li> <li>(b) inquisitive and capable of posing proper questions;</li> <li>(c) they have knowledge of research methods,</li> <li>(d) they can set up their own research,</li> <li>(e) they can critically evaluate results obtained (by themselves and others),</li> <li>(f) <b>they can work in a diverse and international team</b>,</li> <li>(g) they are capable of critical reflection and can adapt their behaviour on the basis of that reflection,</li> <li>(h) they are aware of gaps in their own knowledge and skills, and</li> <li>(i) they are prepared to learn and capable of learning.</li> </ul>

## B.3 ILOs mapped on the modules

**Table B.3** Intended Learning Outcomes mapped on the modules

Intended Learning Outcomes		Modules									
		1 We create identity	2 Smart Environments	3 Living & Working Tomorrow	4 Art, Impact & Technology	5a Smart Technology	5b Interactive Media	6 Intelligent Interaction Design	7 Innovation and Entrepreneurship	8 Data from the Sources to the Senses	9/12 minor + thesis
<b>1</b>	<b>Self-managing design process</b>										
1.1	Graduates understand autonomous design, and have the skills and knowledge to act as an autonomous designer	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1.2	Graduates understand and are skilled in creative thinking and creative acting	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1.3	Graduates understand and have the knowledge to employ multidisciplinary design methods		✓	✓	✓	✓	✓	✓		✓	✓
<b>2</b>	<b>Understanding and use of technology</b>										
2.4a	programming, algorithms, frameworks & protocols	✓	✓		✓		✓				
2.4b	web technology, web services and data management	✓					✓			✓	
2.4c	dynamic behaviour of physical systems, (especially in the electrical domain)		✓	✓		✓				✓	
2.4d	physical computing, sensing, physical (user) interaction		✓			✓				✓	
2.4e	(Internet) network technology and protocols	✓				✓				✓	
2.5	Graduates can rely on a basic knowledge of physics, mathematics and engineering in support of their understanding and use of technology	✓	✓	✓	✓	✓	✓	✓	✓	✓	
<b>3</b>	<b>Designing for interaction, expression, impact and experience</b>										
3.6	Graduates understand and can use expressive technology	✓		✓	✓		✓	✓		✓	✓
3.7a	Graduates have knowledge of and can investigate human technology relationships and human design relationships			✓	✓	✓	✓	✓	✓	✓	✓
3.7b	Graduates <i>are familiar</i> with arts and <i>culture</i>				✓						
3.7c	Graduates <i>are aware of intercultural differences</i>	✓								✓	✓
3.7d	Graduates <i>are aware of human factors, and of social patterns and societal structures</i>		✓	✓	✓			✓	✓	✓	
<b>4</b>	<b>Societal, economic, and global competences</b>										
4.8	Graduates <i>have knowledge and skills to bring creative technology to the market</i>								✓	✓	
4.9	Graduates <i>are aware of the roles of designers in society, and the standards (ethically and legally) for professional behaviour</i>								✓	✓	✓
<b>5</b>	<b>Academic and professional skills</b>										
5.10	Graduates can communicate with experts and non-experts about all aspects of their field		✓	✓	✓	✓	✓	✓	✓	✓	✓
5.11	Graduates: <ul style="list-style-type: none"> <li>- are capable of logical reasoning,</li> <li>- are inquisitive and capable of posing proper questions,</li> <li>- have knowledge of research methods,</li> <li>- can set up their own research,</li> <li>- can critically evaluate results obtained (by themselves and others),</li> <li>- <i>can work in a diverse and international team</i>,</li> <li>- are capable of critical reflection and can adapt their behaviour on the basis of that reflection,</li> <li>- are aware of gaps in their own knowledge and skills, and</li> <li>- are prepared to learn and capable of learning</li> </ul>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

## B.4 ILOs mapped on the Meijers criteria

**Table B.4**

Intended Learning Outcomes mapped on the areas of competence of the Meijers Criteria [16]

Intended Learning Outcomes	Meijers criteria						
	familiar with existing scientific knowledge	competence to acquire new knowledge	carrying out research and design	systematic approach	competent in reasoning	being able to work with others	aware of temporal and social context
	1	2	3	4	5	6	7
1 - Self-managing design process			✓			✓	✓
1.1 a-c			✓		✓		
1.2 a-c	✓	✓	✓	✓			
1.3 a-f			✓			✓	✓
2 Understanding and use of technology	✓						
2.4 a-e	✓						
2.5	✓						
3 Designing for interaction, expression, impact and experience	✓		✓			✓	
3.6 a-b			✓			✓	
3.7 a-d	✓						✓
4 Societal, economic, and global competences							✓
4.8 a-d							✓
4.9							✓
5 Academic and professional skills		✓		✓	✓	✓	
5.10 a-e						✓	
5.11 a-i		✓	✓	✓	✓	✓	✓