

# First cycle degrees (BSc) in Computer Science are awarded to students who

## Knowledge and understanding:

Have demonstrated/acquired

- an understanding in computational thinking<sup>1</sup> including its relevance to everyday life.
- a solid basis in mathematical foundations of CS (such as Discrete Math, Numerical math, probability,)
- demonstrate knowledge and understanding of essential facts, concepts, principles and theories of computer science (including interdisciplinary fields such as HCI, Information Systems, etc)
- Modelling: use such knowledge and understanding in the modelling and design of computer-based systems for the purposes of comprehension, communication, and prediction.
- Methods and tools: select and deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems.
- Critical evaluation and testing: analyse the extent to which a computer-based system meets the criteria defined for its current use and future development.
- The understanding of trade-offs involved in the fields above
- Professional considerations: recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.

## Applying knowledge and understanding:

Can apply their knowledge and understanding to

- specify, design, construct, develop, deploy, and operate efficient and effective computer-based solutions.
- evaluate systems in terms of general quality attributes and possible trade-offs presented within the given problem.
- recognise any risks or safety aspects that may be involved in the operation of computing equipment within a given context.
- deploy effectively the tools used for the construction, documentation, and maintenance of computer applications, with particular emphasis on understanding the whole process involved to solve practical problems.

## Making judgements:

Have the ability to make judgements about

- the specification, design, construction, deployment, evaluation, operation, and risks of computer-based solutions.
- Professional considerations: recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical

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<sup>1</sup> Please see <http://www.cs.cmu.edu/~CompThink/> for a definition of Computational Thinking

and legal practices.

### **Communication skills:**

Can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences:

- The ability to work as a member of a development team, recognising the different roles within a team and different ways of organising teams.
- Reflection and communication: present succinctly to a range of audiences (orally, electronically or in writing) rational and reasoned arguments that address a given information handling problem or opportunity. This should include assessment of the impact of new technologies.

### **Learning skills:**

have developed the following learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.

- Effective information-acquisition and gathering skills
- Numeracy and literacy in both understanding and presenting cases involving a quantitative and qualitative dimension.
- Managing one's own learning and development including time management and organisational skills.
- Appreciating the need for continuing professional development in recognition of the need for lifelong learning.