

Employment Tickets 2021

BSc Data Science, BSc Software Development, MSc Computer Science, MSc Software Design

B-DS (approved 25 February 2021)

The technologies in IT—computers, operating systems, programming languages, algorithms—continuously evolve. The CS educations of the ITU evolve with the field, e.g., the statement “being able to program” today encompasses an understanding and application of IT security tenets. To keep the employment tickets brief, we implicitly understand them in this contemporary sense.

All DS graduates

- Can program in a general-purpose (possibly data science-oriented) programming language, such as Python and R.
- Know the principles of algorithms and data structures for efficient and tailored prototyping or implementation of data analysis tools.
- Can use databases, the SQL language and scripting languages both for simple manipulations of data (extract, clean, transform and load), and for sophisticated queries and transformations.
- Know basic theory, methodology and have acquired substantial practice within machine learning, statistical analysis, network analysis, databases, data processing, and large-scale data analysis.
- Understand existing data analysis tools and packages and can choose appropriate tools for specific data science problems.
- Can organise, summarise, visualise and present – orally and in writing – both the data and the outcomes of inference processes for relevant stakeholders.
- Understand the challenges associated with privacy, security and ethics (e.g. bias) inherent to data science problems and can assess and discuss these for a given technical solution to determine if machine learning is a viable solution.

B-SWU (approved 25 February 2021)

The technologies in IT—computers, operating systems, programming languages, algorithms—continuously evolve. The CS educations of the ITU evolve with the field, e.g., the statement “being able to program” today encompasses an understanding and application of IT security tenets. To keep the employment tickets brief, we implicitly understand them in this contemporary sense.

All SWU graduates

- are able to program imperative and functional programming languages
- know the principles of databases, algorithms and data structures and other technical aspects of software development
- have a comprehension of software development within an organisation, across organisations and other aspects of software development in a global market.
- develop and are able to apply software-related analytical skills
- have knowledge of the challenges associated with privacy, security and ethics

K-CS (approved 25 February 2021)

The technologies in IT—computers, operating systems, programming languages, algorithms—continuously evolve. The CS educations of the ITU evolve with the field, e.g., the statement “being able to program”

today encompasses an understanding and application of IT security tenets. To keep the employment tickets brief, we implicitly understand them in this contemporary sense.

- All Computer Science graduates
 - have the basic skills from a BSc in Computer Science;
 - know most programming paradigms;
 - are able to quickly learn new programming languages;
 - know advanced aspects of programming;
 - know advanced techniques for designing algorithms;
 - know advanced aspects of concurrent and parallel programming;
 - know the basic principles of software security.
- All Computer Science graduates are specialised in a particular area and each specialisation area has relevant employment tickets for some areas.

K-SD (approved 25 February 2021)

The technologies in IT—computers, operating systems, programming languages, algorithms—continuously evolve. The CS educations of the ITU evolve with the field, e.g., the statement “being able to program” today encompasses an understanding and application of IT security tenets. To keep the employment tickets brief, we implicitly understand them in this contemporary sense.

Every SD graduate has a specialisation which embodies the combination of the graduate’s bachelor degree with the computational thinking and principles instilled by the IT University. The program pre-defines the following specialisations:

- (Business Analytics) Can deploy computational thinking and skills in conjunction with a social science bachelor’s background towards constructing and applying computational models. The graduate can design and develop data analytics to support e.g. financial analytics, fraud detection and social network analytics.
- (Technical Interaction Design) Can deploy a solid understanding of both the limits and opportunities of contemporary information technology, especially wrt. software development in conjunction with a humanities bachelor’s background towards constructing formally well-founded interaction designs, based on both qualitative and quantitative empirical methods. The graduate can develop for contemporary application contexts, e.g., for Internet-of-Things, with respect to both UX and technical design and implementation.
- (Software Design & Technology) Can deploy a solid understanding of cutting-edge programming technologies in conjunction with the analytical skills of a natural science bachelor’s background towards both constructing concrete software and, eventually, guiding the technological development of his ambient organisation.

Moreover all SD graduates:

- can develop software in a mainstream object-oriented or imperative programming language (e.g., Java or C#) and can quickly learn other similar programming languages;
- can apply basic principles of databases;
- can apply basic principles of software engineering;
- can apply basic principles of algorithms and data structures;
- has developed and can apply software-related analytical skills;
- can communicate clearly and effectively with both more business-oriented and more technically-oriented counterparties
- understand the challenges associated with privacy, security and ethics and can assess and discuss these for a given technical solution.