Employment Ticket for BSc in Data Science (approved 13 Feb 2020)

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.