**Diploma Supplement for the Computer and Information Sciences Department**

Graduates of the Computer and Information Sciences Department will have theoretical and practical knowledge about the fundamentals of computer systems, including the following areas:

1. Programming languages: C language, Python, Java, JavaScript, and C#
2. Core theoretical topics: discrete mathematics, logic, set theory, probability, statistics, data structures, algorithms, computational models, and complexity models
3. Systems: computer architecture, operating systems and evaluation of their performance, software engineering, communication networks, cloud systems, and information security
4. Information and data management: relational and non-relational databases, data processing, and Big Data

In addition to gaining theoretical and practical knowledge about these core subjects, students will specialize in one of the following areas:

1. **Data Science and Deep Learning**

Graduates of this specialization will have learned:

1. Big Data science and how to conduct experiments using its algorithms
2. Advanced machine learning methods, with an emphasis on their algorithmic and mathematical basis
3. Advanced methods for analyzing data, including data that is not normally distributed (nonparametric statistics, Bayesian statistics, boosting, etc.)
4. Big Data architectures
5. Artificial intelligence and deep learning architectures, including neural networks, decision trees, etc.
6. Algorithms for analyzing text and time-series analysis
7. Data visualization methods and how to experiment using them
8. **Applications and Social Networks**

Graduates of this specialization will have learned:

1. How to develop web and mobile applications
2. Theory and quantitative tools for analyzing networks in general and social networks in particular
3. Principles of working with application servers in the communication, logic, and data layers

Additionally, graduates of this program will have the following knowledge and soft skills:

1. Critical thinking and problem solving
2. Independent learning and teamwork
3. Message placement and presentation
4. Creativity and entrepreneurship