

# COMPUTER SCIENCE MASTERS PROGRAMS

## DEPARTMENT OF COMPUTER SCIENCE



المملكة العربية السعودية  
وزارة التعليم  
جَامِعَةُ أُمِّ الْقُرَى

COLLEGE OF COMPUTER AND  
INFORMATION SYSTEMS

# COMPUTER SCIENCE MASTERS PROGRAMS AT UMM AL-QURA UNIVERSITY



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



## ABOUT UQU

- *Founded in 1949*
- *Largest University in the Kingdom with over 100,000 students*
- *Close to 6,000 graduate students*
- *Over 100 M.S. and Ph.D. degrees offered*



المملكة العربية السعودية  
وزارة التعليم  
جامعة أم القرى

## COMPUTER SCIENCE (PROJECT)

### PROGRAM REQUIREMENTS

- $\geq 2.75$  Cumulative GPA
- 45 credit hours
- Fees: 15,000 SR per semester

### CORE COURSES (24 CREDIT HOURS)

- |  |                                 |
|--|---------------------------------|
| ▪ Research Methods in Computer Science (3) | ▪ Advanced Database Systems (3) |
| ▪ Advanced Operating Systems (3)           | ▪ Group Project (1)             |
| ▪ Advanced Software Engineering (3)        | ▪ Algorithms Design (3)         |
|  | ▪ Independent Studies I (2)     |
|  | ▪ Research Project (6)          |

### ELECTIVE COURSES

- |   |  |
|---|--|
| ▪ Software Architecture (3)                   | ▪ Cybersecurity & Digital Crime (3)                  |
| ▪ Software Project Management (3)             | ▪ Digital Forensic Investigation (3)                 |
| ▪ Data Mining (3)                             | ▪ Ethical Hacking & Piracy (3)                       |
| ▪ Computer Systems Programming (3)            | ▪ Mobile Security (3)                                |
| ▪ Design Patterns (3)                         | ▪ Enterprise Information Security Infrastructure (3) |
| ▪ Functional & Concurrent Programming (3)     | ▪ Introduction to Blockchain (3)                     |
| ▪ Mobile Software Development (3)             | ▪ Advanced Topics in Cybersecurity (3)               |
| ▪ Service-Oriented Architecture (3)           | ▪ Cloud Computing & Big Data (3)                     |
| ▪ Computer Simulation & Modeling (3)          | ▪ Data Management & Governance (3)                   |
| ▪ Software Testing (3)                        | ▪ Geographic Information Systems Analysis (3)        |
| ▪ Internet Application Development (3)        | ▪ Data Retrieval & Web Search (3)                    |
| ▪ Advanced Topics in Software Engineering (3) | ▪ Social Network Analytics (3)                       |
| ▪ Healthcare Data Analytics (3)               | ▪ Internet of Things (3)                             |
| ▪ Business Data Analytics (3)                 | ▪ Information Technology & Entrepreneurship (3)      |
| ▪ Advanced Topics in Data Science (3)         | ▪ Wireless Communications & Networking (3)           |
| ▪ Introduction to Bioinformatics (3)          | ▪ Advanced Topics in Computer Science (3)            |
| ▪ Distributed Systems (3)                     | ▪ Cryptography Fundamentals (3)                      |
| ▪ High Performance Computing (3)              | ▪ Internet Application Security (3)                  |
| ▪ Introduction to Robotics (3)                |  |
| ▪ Advanced Robotics (3)                       |  |



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## COMPUTER SCIENCE (THESIS)

### PROGRAM REQUIREMENTS

- $\geq 2.75$  Cumulative GPA
- 39 credit hours
- Fees: 15,000 SR per semester

### CORE COURSES (20 CREDIT HOURS)

- |  |                                 |
|--|---------------------------------|
| ▪ Research Methods in Computer Science (3) | ▪ Advanced Database Systems (3) |
| ▪ Advanced Operating Systems (3)           | ▪ Algorithms Design (3)         |
| ▪ Advanced Software Engineering (3)        | ▪ Group Project (1)             |
|  | ▪ Independent Studies I (2)     |
|  | ▪ Independent Studies II (2)    |

### ELECTIVE COURSES

- |   |  |
|---|--|
| ▪ Software Architecture (3)                   | ▪ Cybersecurity & Digital Crime (3)                  |
| ▪ Software Project Management (3)             | ▪ Digital Forensic Investigation (3)                 |
| ▪ Data Mining (3)                             | ▪ Ethical Hacking & Piracy (3)                       |
| ▪ Computer Systems Programming (3)            | ▪ Mobile Security (3)                                |
| ▪ Design Patterns (3)                         | ▪ Enterprise Information Security Infrastructure (3) |
| ▪ Functional & Concurrent Programming (3)     | ▪ Introduction to Blockchain (3)                     |
| ▪ Mobile Software Development (3)             | ▪ Advanced Topics in Cybersecurity (3)               |
| ▪ Service-Oriented Architecture (3)           | ▪ Cloud Computing & Big Data (3)                     |
| ▪ Computer Simulation & Modeling (3)          | ▪ Data Management & Governance (3)                   |
| ▪ Software Testing (3)                        | ▪ Geographic Information Systems Analysis (3)        |
| ▪ Internet Application Development (3)        | ▪ Data Retrieval & Web Search (3)                    |
| ▪ Advanced Topics in Software Engineering (3) | ▪ Social Network Analytics (3)                       |
| ▪ Healthcare Data Analytics (3)               | ▪ Internet of Things (3)                             |
| ▪ Business Data Analytics (3)                 | ▪ Information Technology & Entrepreneurship (3)      |
| ▪ Advanced Topics in Data Science (3)         | ▪ Wireless Communications & Networking (3)           |
| ▪ Introduction to Bioinformatics (3)          | ▪ Advanced Topics in Computer Science (3)            |
| ▪ Distributed Systems (3)                     | ▪ Cryptography Fundamentals (3)                      |
| ▪ High Performance Computing (3)              | ▪ Internet Application Security (3)                  |
| ▪ Introduction to Robotics (3)                |  |
| ▪ Advanced Robotics (3)                       |  |

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## ARTIFICIAL INTELLIGENCE (PROJECT)

### PROGRAM REQUIREMENTS

- $\geq 2.75$  Cumulative GPA
- 45 credit hours
- Fees: 15,000 SR per semester

### CORE COURSES (30 CREDIT HOURS)

- |  |                                   |
|--|-----------------------------------|
| ▪ Advanced Mathematics for Artificial Intelligence (3) | ▪ Neural Networks (3)             |
| ▪ Fundamentals of Artificial Intelligence (3)          | ▪ Natural Language Processing (3) |
| ▪ Machine Learning (3)                                 | ▪ Group Project (1)               |
| ▪ Data Mining (3)                                      | ▪ Independent Studies I (2)       |
| ▪ Optimization Methods (3)                             | ▪ Research Project (6)            |

### ELECTIVE COURSES

- |  |   |
|--|---|
| ▪ Research Methods in Computer Science (3)       | ▪ Deep Learning (3)                           |
| ▪ Reinforcement Learning (3)                     | ▪ Evolutionary Computation (3)                |
| ▪ Data Visualization (3)                         | ▪ Internet of Things Systems (3)              |
| ▪ Pattern Recognition (3)                        | ▪ Computer Vision (3)                         |
| ▪ Social Network Analytics (3)                   | ▪ Advanced Topics in Information Security (3) |
| ▪ Advanced Robotics (3)                          | ▪ Advanced Topics in Cloud Computing (3)      |
| ▪ Distributed Systems (3)                        |   |
| ▪ Advanced Topics in Artificial Intelligence (3) |   |
| ▪ Speech Recognition (3)                         |   |



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## ARTIFICIAL INTELLIGENCE (THESIS)

### PROGRAM REQUIREMENTS

- $\geq 2.75$  Cumulative GPA
- 38 credit hours
- Fees: 15,000 SR per semester

### CORE COURSES (23 CREDIT HOURS)

- |   |                                   |
|---|-----------------------------------|
| ▪ Fundamentals of Artificial Intelligence (3) | ▪ Natural Language Processing (3) |
| ▪ Machine Learning (3)                        | ▪ Group Project (1)               |
| ▪ Data Mining (3)                             | ▪ Independent Studies I (2)       |
| ▪ Optimization Methods (3)                    | ▪ Independent Studies II (2)      |
| ▪ Neural Networks (3)                         |                                   |

### ELECTIVE COURSES

- |  |   |
|--|---|
| ▪ Research Methods in Computer Science (3)       | ▪ Deep Learning (3)                           |
| ▪ Reinforcement Learning (3)                     | ▪ Evolutionary Computation (3)                |
| ▪ Data Visualization (3)                         | ▪ Internet of Things Systems (3)              |
| ▪ Pattern Recognition (3)                        | ▪ Computer Vision (3)                         |
| ▪ Social Network Analytics (3)                   | ▪ Advanced Topics in Information Security (3) |
| ▪ Introduction to Robotics (3)                   | ▪ Advanced Topics in Cloud Computing (3)      |
| ▪ Distributed Systems (3)                        |   |
| ▪ Advanced Topics in Artificial Intelligence (3) |   |
| ▪ Speech Recognition (3)                         |   |