

***List of courses for preparing the Master degree in computer science,
Al Akhawayn University in Ifrane, Morocco.
(Web site: www.aui.ma)***

For more information, an additional document about Al Akhawayn University is provided.

Pre-requisites

- **CSC 3326 Database Systems 3(3-0)**

Pre-requisite: CSC 3322

File structures, hierarchical and network data models in addition to the relational model and relational algebra. SQL is also introduced. Models for database design are presented and compared. Addresses current trends in Database including object-oriented and functional models as well as distributed databases. Normally offered in the Spring semester.

- **CSC 3322 Data Structures 3(3-0)**

Pre-requisite: CSC 2301

A basic course in data structures, including introductory concepts, dense lists, ordered lists and trees.

- **CSC 2301 Computer Programming II 3(3-0)**

Pre-requisite: CSC 1401

The course is designed for students who can already program in C language. It aims to introduce students to the Object Oriented Model (O.O.M.), and to develop and extend their programming skills. It allows students to learn C++ exceptional features related to the O.O.M. Specifically, the course material covers topics like C++ syntax, more Input and Output, controlling execution, classes, methods, operator overloading, inheritance, polymorphism, encapsulation, aggregation, exceptions, templates , and other advanced features. A strong emphasis is put on practice via programming project assignments.

Master courses

- **CSC5301 Advanced Database Systems and Data Warehousing 3(3-0)**

Pre-requisites: CSC 3326

Covers advanced issues in database design, including distributed and object-oriented databases, database optimization, etc. Significant focus will be placed on data warehousing, including case study analysis and project design.

- **CSC 5302 Software Engineering 3(3-0)**

Using class projects, this course introduces the student to techniques used in the software development life-cycle.

- **CSC 5305 Programming Languages and their Compilers 3(3-0)**
An introduction to techniques for implementing a language compiler along with the internal structure and functionality.
- **CSC 5309 Artificial Intelligence 3(3-0)**
Provides an introduction to advanced techniques for the programming of intelligent systems and problem-solving techniques. Topics covered include: knowledge representation, propositional and predicate logic, expert systems, search and machine learning.
- **CSC 5310 Knowledge-Based Systems 3(3-0)**
Students are introduced to rule-based programming, control and inference strategies, knowledge representation, and acquisition techniques of knowledge-based systems.
- **CSC 5317 Advanced Algorithms 3(3-0)**
The design and analysis of advanced algorithms for graph problems, computational geometry problems, linear and integer programming problems, number theory problems, etc. Content may vary from semester to semester.
- **CSC 5345 Data Mining 3(3-0)**
Covers the most popular machine learning techniques used for "mining" knowledge that lies buried in an information system, including neural networks, decision trees, genetic algorithms, and fuzzy logic. Shows how these tools can be applied for making better decisions. Discusses case studies that provide good models for such applications.
- **CSC 5352 Fuzzy Sets and Systems 3(3-0)**
Introduces the basic concept of fuzziness and the underlying theory. Fuzzy sets, fuzzy logic and fuzzy numbers, fuzzy operations, fuzzy relationships, and extension principle. The application of these concepts to engineering and technology are emphasized, including fuzzy rule-based systems, fuzzy decision-making, fuzzy pattern recognition and fuzzy control.
- **CSC 5361 Software Design and Architecture 3(3-0)**
Pre-requisites: CSC 3324 and CSC 3325, or CSC 5302
This course explores the different methods and approaches to design software, namely, modular design, data and data flow design, client / server design, procedural design, process design, object-oriented design, database design, and real-time design. Emphasis is put on object-oriented design and client / server design, which are supplemented with case studies. An integral part of the course is the achievement of a class project in either object-oriented and / or client server design.
- **CSC 5365 Advanced Computer Networks 3(3-0)**
Pre-requisites: CSC 3352 and CSC3353
Includes thorough coverage of wired LANs (CSMA/CD, Token Ring, Token bus, Switched Ethernet, Fast Ethernet, FDDI, Gigabit Ethernet and ATM), wireless LANs, packet-switched WANs (X25, Frame Relay, ATM), circuit-switched WANs (ISDN) and internetworking. Design issues. Also covers wireless communications.

- **CSC 5366 TCP/IP Networks 3(3-0)**

Pre-requisites: CSC 3352 and CSC3353

Gives detailed account of the TCP / IP suite of protocols, multicasting architecture, routing protocols, Internetworking with TCP / IP Network Management and Ipv6.

- **CSC 5343 Final Project 6(3-0)**

Pre-requisite: Approval of Graduate Advisor

Students pursuing the professional program must register for and complete this course.

- **ACC 5302 Advanced Financial and Managerial Accounting 3 (3-0)**

Pre-requisite ACC 5301

This course focuses on the use of accounting information for internal planning and control purposes. It explores the analysis and design of systems that provide cost information which is useful in making strategic and operating decisions. At a minimum, the following subjects will be discussed: cost system design, financial responsibility centers, planning and budgeting systems, advantages and limitations of activity-based costing methods, performance measures and evaluation.

***Licence (Bachelor) degree information, Mohammed V, faculty of
science, Rabat, Morocco
(Web site: www.fsr.ac.ma)***

For more information, an additional document about Mohammed V University is provided.

To get a licence degree in applied mathematics, major numerical analysis from Mohammed V University, the following requirements should be fulfilled:

- To pass MP1 and MP2 levels (each level requires one year full time study). During these classes, we took the following courses: Algebra, Mathematical Analysis, Electrical engineering, Electrostatics, Optics, Nuclear Physics, Quanta Mechanics, and Thermal science.
- To pass M3 level (one year full time studies): Courses are: Probability and Integration (measures, integration, Fourier transform, etc), Numerical Analysis I and computer programming, Topology (Banach space, Sobolev space, Metric space, etc), and Differential Equations.
- To pass M4 level (one year full time studies): Courses are: Numerical Analysis II, Mathematical Programming, Optimisation, Final Control (Optimal Control), and computer programming (optional course).

PS: I ranked top of the class in the final level, I have received High Honours (mention Bien in the French system).