



EGYPTIAN NATIONAL UNIVERSITIES

مشروع إنشاء الجامعات المصرية الأهلية

جامعة العلمين الدولية

ALALAMEIN INTERNATIONAL UNIVERSITY



Computer Engineering Program

برنامج هندسة الحاسب

I. Embedded Systems

أ. النظر الودهجة

Study Plan

الخطة الدراسية

| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|-------------------------------------|-----|-----|-----|-----|-------|----|-----|------|
| 1 | MAT111 | Mathematics I | 3 | 0 | 1 | 0 | 4 | 3 | 150 | 6 |
| | MAT123 | Mechanics | 2 | 2 | 0 | 0 | 4 | 3 | 150 | 6 |
| | MEC011 | Engineering Drawing (1) | 2 | 0 | 3 | 0 | 5 | 3 | 135 | 4 |
| | PHY212 | Introduction to Engineering Physics | 2 | 2 | 0 | 0 | 4 | 3 | 150 | 6 |
| | CSE014 | Structured Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UC1 | University Requirement (1) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 17 | 855 | 32 |
| 2 | MAT112 | Mathematics II | 3 | 0 | 1 | 0 | 4 | 3 | 150 | 6 |
| | MAT131 | Probability & Statistics I | 2 | 1 | 2 | 0 | 5 | 3 | 195 | 6 |
| | CSE015 | Object Oriented Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE315 | Discrete Mathematics | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | UC2 | University Requirement (2) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | UC3 | University Requirement (3) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 22 | 16 | 855 | 32 |



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ALALAMEIN INTERNATIONAL UNIVERSITY



| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--|-----|-----|-----|-----|-----------|-----------|------------|-----------|
| 3 | MAT212 | Linear Algebra | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | CSE111 | Data Structures | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE113 | Electric & Electronic Circuits | 1 | 3 | 2 | 0 | 6 | 3 | 180 | 6 |
| | CSE131 | Logic Design | 2 | 2 | 2 | 0 | 6 | 3 | 195 | 6 |
| | UC4 | University Requirement (4) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | UC5 | University Requirement (5) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 25 | 16 | 885 | 32 |
| 4 | MAT231 | Probability & Statistics II | 2 | 2 | 1 | 0 | 5 | 3 | 195 | 6 |
| | MAT312 | Differential Equations | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | CSE132 | Computer Architecture & Organization | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | AIE111 | Artificial Intelligence | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E1 | Elective Course (1) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | | | | | | | 24 | 15 | 870 | 30 |
| 5 | E2 | Elective Course (2) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE221 | Database Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE233 | Operating Systems | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | AIE121 | Machine Learning | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE291 | Field Training 1 in Computer Engineering | 2 | 0 | 0 | 0 | 2 | 2 | 60 | 4 |
| | UE1 | Elective University (1) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 16 | 855 | 32 |
| 6 | CSE112 | Design & Analysis of Algorithms | 3 | 0 | 3 | 0 | 6 | 4 | 195 | 8 |
| | CSE211 | Web Programming | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--|-----|-----|-----|-----|-----------|-----------|------------|-----------|
| | CSE251 | Software Engineering | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE261 | Computer Networks | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | CSE234 | Embedded Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | | | | | | | 26 | 16 | 885 | 32 |
| 7 | ELE432 | Digital Signal Processing | 2 | 1 | 1 | 0 | 4 | 3 | 150 | 6 |
| | CSE242 | Cryptography | 2 | 1 | 2 | 0 | 5 | 3 | 180 | 6 |
| | CSE281 | Image Processing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE344 | Introduction to Cyber Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE363 | Cloud Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | UE2 | Elective University (2) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 26 | 17 | 960 | 34 |
| 8 | CSE272 | Parallel & Distributed Systems | 2 | 2 | 1 | 0 | 5 | 3 | 150 | 6 |
| | CSE335 | Real Time & Embedded Systems Design | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE446 | Information & Computer Networks Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE464 | Internet of things | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE392 | Field Training 2 in Computer Engineering | 2 | 0 | 0 | 0 | 2 | 2 | 60 | 4 |
| | UC6 | University Requirement (6) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 16 | 840 | 32 |
| 9 | E3 | Elective Course (3) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E4 | Elective Course (4) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|-------------------------------------|-----|-----|-----|-----|------------|------------|-------------|------------|
| | CSE436 | Selected Topics in Embedded Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE493 | Graduation Project 1 | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UC7 | University Requirement (7) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 22 | 14 | 810 | 28 |
| 10 | E5 | Elective Course (5) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E6 | Elective Course (6) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE466 | Selected Topics in IoT | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE494 | Graduation Project 2 | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UE3 | Elective University (3) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 22 | 14 | 810 | 28 |
| | | | | | | | 239 | 157 | 8625 | 312 |



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Elective (E1)

| | |
|--------|-----------------------|
| CHE142 | Engineering Chemistry |
| MAT121 | Dynamics |
| MAT122 | Statics |
| MAT315 | Numerical Analysis |
| PHY211 | Physics II |

Elective (E2)

| | |
|--------|---------------------------------------|
| ELE115 | Electrical Circuits & Measurements |
| ELE215 | Electronics & Digital Circuits |
| ELE232 | Fundamentals of Communication Systems |
| ELE233 | Automatic Control Systems |
| ELE338 | Wireless Communication Networks |

Elective (E3)

| | |
|--------|------------------------------------|
| CSE241 | Security of Information Systems |
| CSE311 | Design of Compilers |
| CSE271 | Introduction to Parallel Computing |
| AIE231 | Neural Networks |

Elective (E4)

| | |
|--------|---------------------------|
| CSE322 | Big Data Analytics 1 |
| CSE323 | Advanced Database Systems |
| CSE373 | Parallel Programming |
| CSE383 | Computer Vision |

Elective (E5)

| | |
|--------|---------------------------|
| AIE322 | Advanced Machine Learning |
| AIE323 | Data Mining |
| AIE332 | Deep Learning |
| AIE351 | Robotics Design |

Elective (E6)

| | |
|--------|------------------------------------|
| CSE425 | Big Data Analytics 2 |
| CSE426 | Selected Topics in Data Science |
| CSE465 | Selected Topics in Cloud Computing |
| CSE474 | Distributed Information Systems |
| CSE475 | High Performance Computing |



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Computer Engineering Program

برنامج هندسة الحاسب

II. Cloud Computing

II. الحوسبة السحابية

Study Plan

الخطة الدراسية

| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|-------------------------------------|-----|-----|-----|-----|-------|-----|-----|------|
| 1 | MAT111 | Mathematics I | 3 | 0 | 1 | 0 | 4 | 3 | 150 | 6 |
| | MAT123 | Mechanics | 2 | 2 | 0 | 0 | 4 | 3 | 150 | 6 |
| | MEC011 | Engineering Drawing (1) | 2 | 0 | 3 | 0 | 5 | 3 | 135 | 4 |
| | PHY212 | Introduction to Engineering Physics | 2 | 2 | 0 | 0 | 4 | 3 | 150 | 6 |
| | CSE014 | Structured Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UC1 | University Requirement (1) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 17 | 855 | 32 |
| 2 | MAT112 | Mathematics II | 3 | 0 | 1 | 0 | 4 | 3 | 150 | 6 |
| | MAT131 | Probability & Statistics I | 2 | 1 | 2 | 0 | 5 | 3 | 195 | 6 |
| | CSE015 | Object Oriented Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE315 | Discrete Mathematics | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | UC2 | University Requirement (2) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | UC3 | University Requirement (3) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | 22 | 16 | 855 | 32 | |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--|-----|-----|-----|-----|-------|----|-----|------|
| 3 | MAT212 | Linear Algebra | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | CSE111 | Data Structures | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE113 | Electric & Electronic Circuits | 1 | 3 | 2 | 0 | 6 | 3 | 180 | 6 |
| | CSE131 | Logic Design | 2 | 2 | 2 | 0 | 6 | 3 | 195 | 6 |
| | UC4 | University Requirement (4) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | UC5 | University Requirement (5) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 25 | 16 | 885 | 32 |
| 4 | MAT231 | Probability & Statistics II | 2 | 2 | 1 | 0 | 5 | 3 | 195 | 6 |
| | MAT312 | Differential Equations | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | CSE132 | Computer Architecture & Organization | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | AIE111 | Artificial Intelligence | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E1 | Elective Course (1) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | | | | | | | 24 | 15 | 870 | 30 |
| 5 | E2 | Elective Course (2) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE221 | Database Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE233 | Operating Systems | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | AIE121 | Machine Learning | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE291 | Field Training 1 in Computer Engineering | 2 | 0 | 0 | 0 | 2 | 2 | 60 | 4 |
| | UE1 | Elective University (1) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 16 | 855 | 32 |
| | CSE112 | Design & Analysis of Algorithms | 3 | 0 | 3 | 0 | 6 | 4 | 195 | 8 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--|-----|-----|-----|-----|-------|----|-----|------|
| 6 | CSE211 | Web Programming | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | CSE251 | Software Engineering | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE261 | Computer Networks | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | CSE234 | Embedded Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | | | | | | | 26 | 16 | 885 | 32 |
| 7 | ELE432 | Digital Signal Processing | 2 | 1 | 1 | 0 | 4 | 3 | 150 | 6 |
| | CSE242 | Cryptography | 2 | 1 | 2 | 0 | 5 | 3 | 180 | 6 |
| | CSE271 | Introduction to Parallel Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE344 | Introduction to Cyber Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE363 | Cloud Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | UE2 | Elective University (2) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 26 | 17 | 960 | 34 |
| 8 | CSE272 | Parallel & Distributed Systems | 2 | 2 | 1 | 0 | 5 | 3 | 150 | 6 |
| | CSE322 | Big Data Analytics 1 | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE446 | Information & Computer Networks Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE464 | Internet of things | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE392 | Field Training 2 in Computer Engineering | 2 | 0 | 0 | 0 | 2 | 2 | 60 | 4 |
| | UC6 | University Requirement (6) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 16 | 840 | 32 |
| 9 | E3 | Elective Course (3) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E4 | Elective Course (4) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|------------------------------------|-----|-----|-----|-----|------------|------------|-------------|------------|
| | CSE465 | Selected Topics in Cloud Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE493 | Graduation Project 1 | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UC7 | University Requirement (7) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | | 22 | 14 | 810 |
| 10 | E5 | Elective Course (5) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E6 | Elective Course (6) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE427 | Selected Topics in Big Data | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE494 | Graduation Project 2 | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UE3 | Elective University (3) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 22 | 14 | 810 | 28 |
| | | | | | | | 239 | 157 | 8625 | 312 |



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Elective (E1)

| | |
|--------|-----------------------|
| CHE142 | Engineering Chemistry |
| MAT121 | Dynamics |
| MAT122 | Statics |
| MAT315 | Numerical Analysis |
| PHY211 | Physics II |

Elective (E2)

| | |
|--------|---------------------------------------|
| ELE115 | Electrical Circuits & Measurements |
| ELE215 | Electronics & Digital Circuits |
| ELE232 | Fundamentals of Communication Systems |
| ELE233 | Automatic Control Systems |
| ELE338 | Wireless Communication Networks |

Elective (E3)

| | |
|--------|---------------------------------|
| CSE241 | Security of Information Systems |
| CSE281 | Image Processing |
| AIE231 | Neural Networks |
| BMD311 | Introduction to Bioinformatics |

Elective (E4)

| | |
|--------|-------------------------------------|
| CSE311 | Design of Compilers |
| CSE373 | Parallel Programming |
| CSE335 | Real Time & Embedded Systems Design |
| CSE362 | Industrial Networks |
| CSE383 | Computer Vision |

Elective (E5)

| | |
|--------|---------------------------|
| AIE322 | Advanced Machine Learning |
| AIE323 | Data Mining |
| AIE332 | Deep Learning |
| AIE351 | Robotics Design |

Elective (E6)

| | |
|--------|--------------------------------------|
| CSE425 | Big Data Analytics 2 |
| CSE426 | Selected Topics in Data Science |
| CSE447 | Selected Topics in Computer Security |
| CSE466 | Selected Topics in IoT |
| CSE474 | Distributed Information Systems |
| CSE475 | High Performance Computing |



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جامعة العلمين الدولية

ALALAMEIN INTERNATIONAL UNIVERSITY

**Computer Engineering Program****برنامج هندسة الحاسب****III. High Performance Computing****III. الحوسبة عالية الأداء****Study Plan****الخطة الدراسية**

| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|-------------------------------------|-----|-----|-----|-----|-----------|-----------|------------|-----------|
| 1 | MAT111 | Mathematics I | 3 | 0 | 1 | 0 | 4 | 3 | 150 | 6 |
| | MAT123 | Mechanics | 2 | 2 | 0 | 0 | 4 | 3 | 150 | 6 |
| | MEC011 | Engineering Drawing (1) | 2 | 0 | 3 | 0 | 5 | 3 | 135 | 4 |
| | PHY212 | Introduction to Engineering Physics | 2 | 2 | 0 | 0 | 4 | 3 | 150 | 6 |
| | CSE014 | Structured Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UC1 | University Requirement (1) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 17 | 855 | 32 |
| 2 | MAT112 | Mathematics II | 3 | 0 | 1 | 0 | 4 | 3 | 150 | 6 |
| | MAT131 | Probability & Statistics I | 2 | 1 | 2 | 0 | 5 | 3 | 195 | 6 |
| | CSE015 | Object Oriented Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE315 | Discrete Mathematics | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | UC2 | University Requirement (2) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | UC3 | University Requirement (3) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 22 | 16 | 855 | 32 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--|-----|-----|-----|-----|-----------|-----------|------------|-----------|
| 3 | MAT212 | Linear Algebra | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | CSE111 | Data Structures | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE113 | Electric & Electronic Circuits | 1 | 3 | 2 | 0 | 6 | 3 | 180 | 6 |
| | CSE131 | Logic Design | 2 | 2 | 2 | 0 | 6 | 3 | 195 | 6 |
| | UC4 | University Requirement (4) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | UC5 | University Requirement (5) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 25 | 16 | 885 | 32 |
| 4 | MAT231 | Probability & Statistics II | 2 | 2 | 1 | 0 | 5 | 3 | 195 | 6 |
| | MAT312 | Differential Equations | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | CSE132 | Computer Architecture & Organization | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | AIE111 | Artificial Intelligence | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E1 | Elective Course (1) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | | | | | | | 24 | 15 | 870 | 30 |
| 5 | E2 | Elective Course (2) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE221 | Database Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE233 | Operating Systems | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | AIE121 | Machine Learning | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE291 | Field Training 1 in Computer Engineering | 2 | 0 | 0 | 0 | 2 | 2 | 60 | 4 |
| | UE1 | Elective University (1) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 16 | 855 | 32 |
| 6 | CSE112 | Design & Analysis of Algorithms | 3 | 0 | 3 | 0 | 6 | 4 | 195 | 8 |
| | CSE211 | Web Programming | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--|-----|-----|-----|-----|-----------|-----------|------------|------------|
| | CSE251 | Software Engineering | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE261 | Computer Networks | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | CSE234 | Embedded Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | | | | | | | | 26 | 16 | 885 |
| 7 | ELE432 | Digital Signal Processing | 2 | 1 | 1 | 0 | 4 | 3 | 150 | 6 |
| | CSE271 | Introduction to Parallel Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE272 | Parallel & Distributed Systems | 2 | 2 | 1 | 0 | 5 | 3 | 150 | 6 |
| | CSE363 | Cloud Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE344 | Introduction to Cyber Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | UE2 | Elective University (2) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 26 | 17 | 930 | 34 |
| 8 | CSE373 | Parallel Programming | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE446 | Information & Computer Networks Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE464 | Internet of things | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE475 | High Performance Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE392 | Field Training 2 in Computer Engineering | 2 | 0 | 0 | 0 | 2 | 2 | 60 | 4 |
| | UC6 | University Requirement (6) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 16 | 870 | 32 |
| 9 | E3 | Elective Course (3) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E4 | Elective Course (4) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE411 | Theory of Computation & Compilers | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |



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ALALAMEIN INTERNATIONAL UNIVERSITY



| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|---|-----|-----|-----|-----|------------|------------|-------------|------------|
| | CSE493 | Graduation Project 1 | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UC7 | University Requirement (7) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | | 22 | 14 | 810 |
| 10 | E5 | Elective Course (5) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E6 | Elective Course (6) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE476 | Selected Topics in High Performance Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE494 | Graduation Project 2 | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UE3 | Elective University (3) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | | 22 | 14 | 810 |
| | | | | | | | 239 | 157 | 8625 | 312 |



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Elective (E1)

| | |
|--------|-----------------------|
| CHE142 | Engineering Chemistry |
| MAT121 | Dynamics |
| MAT122 | Statics |
| MAT315 | Numerical Analysis |
| PHY211 | Physics II |

Elective (E2)

| | |
|--------|---------------------------------------|
| ELE115 | Electrical Circuits & Measurements |
| ELE215 | Electronics & Digital Circuits |
| ELE232 | Fundamentals of Communication Systems |
| ELE233 | Automatic Control Systems |
| ELE338 | Wireless Communication Networks |

Elective (E3)

| | |
|--------|---------------------------------|
| CSE241 | Security of Information Systems |
| CSE281 | Image Processing |
| AIE231 | Neural Networks |
| CSE311 | Design of Compilers |

Elective (E4)

| | |
|--------|-------------------------------------|
| CSE322 | Big Data Analytics 1 |
| CSE335 | Real Time & Embedded Systems Design |
| CSE383 | Computer Vision |
| BMD311 | Introduction to Bioinformatics |

Elective (E5)

| | |
|--------|---------------------------|
| AIE316 | Evolutionary Algorithms |
| AIE322 | Advanced Machine Learning |
| AIE323 | Data Mining |
| AIE332 | Deep Learning |
| AIE351 | Robotics Design |

Elective (E6)

| | |
|--------|-------------------------------------|
| CSE425 | Big Data Analytics 2 |
| CSE427 | Selected Topics in Big Data |
| CSE436 | Selected Topics in Embedded Systems |
| CSE465 | Selected Topics in Cloud Computing |
| CSE466 | Selected Topics in IoT |



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**Computer Engineering Program****برنامج هندسة الحاسب****IV. Cyber Security****.IV الأمن السيبراني****Study Plan****الخطة الدراسية**

| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|-------------------------------------|-----|-----|-----|-----|-------|----|-----|------|
| 1 | MAT111 | Mathematics I | 3 | 0 | 1 | 0 | 4 | 3 | 150 | 6 |
| | MAT123 | Mechanics | 2 | 2 | 0 | 0 | 4 | 3 | 150 | 6 |
| | MEC011 | Engineering Drawing (1) | 2 | 0 | 3 | 0 | 5 | 3 | 135 | 4 |
| | PHY212 | Introduction to Engineering Physics | 2 | 2 | 0 | 0 | 4 | 3 | 150 | 6 |
| | CSE014 | Structured Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UC1 | University Requirement (1) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 17 | 855 | 32 |
| 2 | MAT112 | Mathematics II | 3 | 0 | 1 | 0 | 4 | 3 | 150 | 6 |
| | MAT131 | Probability & Statistics I | 2 | 1 | 2 | 0 | 5 | 3 | 195 | 6 |
| | CSE015 | Object Oriented Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE315 | Discrete Mathematics | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | UC2 | University Requirement (2) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | UC3 | University Requirement (3) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 22 | 16 | 855 | 32 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--|-----|-----|-----|-----|-------|----|-----|------|
| 3 | MAT212 | Linear Algebra | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | CSE111 | Data Structures | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE113 | Electric & Electronic Circuits | 1 | 3 | 2 | 0 | 6 | 3 | 180 | 6 |
| | CSE131 | Logic Design | 2 | 2 | 2 | 0 | 6 | 3 | 195 | 6 |
| | UC4 | University Requirement (4) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | UC5 | University Requirement (5) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 25 | 16 | 885 | 32 |
| 4 | MAT231 | Probability & Statistics II | 2 | 2 | 1 | 0 | 5 | 3 | 195 | 6 |
| | MAT312 | Differential Equations | 2 | 0 | 2 | 0 | 4 | 3 | 150 | 6 |
| | CSE132 | Computer Architecture & Organization | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | AIE111 | Artificial Intelligence | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E1 | Elective Course (1) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | | | | | | | 24 | 15 | 870 | 30 |
| 5 | E2 | Elective Course (2) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE221 | Database Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE233 | Operating Systems | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | AIE121 | Machine Learning | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE291 | Field Training 1 in Computer Engineering | 2 | 0 | 0 | 0 | 2 | 2 | 60 | 4 |
| | UE1 | Elective University (1) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | 24 | 16 | 855 | 32 |
| 6 | CSE112 | Design & Analysis of Algorithms | 3 | 0 | 3 | 0 | 6 | 4 | 195 | 8 |
| | CSE211 | Web Programming | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--|-----|-----|-----|-----|-------|-----------|-----------|------------|
| | CSE251 | Software Engineering | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE261 | Computer Networks | 2 | 2 | 1 | 0 | 5 | 3 | 165 | 6 |
| | CSE234 | Embedded Systems | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | | | | | | | | 26 | 16 | 885 |
| 7 | ELE432 | Digital Signal Processing | 2 | 1 | 1 | 0 | 4 | 3 | 150 | 6 |
| | CSE241 | Security of Information Systems | 2 | 2 | 1 | 0 | 5 | 3 | 150 | 6 |
| | CSE242 | Cryptography | 2 | 1 | 2 | 0 | 5 | 3 | 180 | 6 |
| | CSE363 | Cloud Computing | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE344 | Introduction to Cyber Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | UE2 | Elective University (2) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | | 26 | 17 | 930 |
| 8 | CSE243 | Secure Programming | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | CSE373 | Parallel Programming | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE446 | Information & Computer Networks Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE464 | Internet of things | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE392 | Field Training 2 in Computer Engineering | 2 | 0 | 0 | 0 | 2 | 2 | 60 | 4 |
| | UC6 | University Requirement (6) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | | 24 | 16 | 870 |
| 9 | E3 | Elective Course (3) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E4 | Elective Course (4) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE445 | Selected Topics in Information Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |



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| Semester | Code | Course Name | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|--------------------------------------|-----|-----|-----|-----|------------|------------|-------------|------------|
| | CSE493 | Graduation Project 1 | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UC7 | University Requirement (7) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | | 22 | 14 | 810 |
| 10 | E5 | Elective Course (5) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | E6 | Elective Course (6) | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE447 | Selected Topics in Computer Security | 2 | 2 | 1 | 0 | 5 | 3 | 180 | 6 |
| | CSE494 | Graduation Project 2 | 2 | 3 | 0 | 0 | 5 | 3 | 180 | 6 |
| | UE3 | Elective University (3) | 2 | 0 | 0 | 0 | 2 | 2 | 90 | 4 |
| | | | | | | | | 22 | 14 | 810 |
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Elective (E1)

| | |
|--------|-----------------------|
| CHE142 | Engineering Chemistry |
| MAT121 | Dynamics |
| MAT122 | Statics |
| MAT315 | Numerical Analysis |
| PHY211 | Physics II |

Elective (E2)

| | |
|--------|---------------------------------------|
| ELE115 | Electrical Circuits & Measurements |
| ELE215 | Electronics & Digital Circuits |
| ELE232 | Fundamentals of Communication Systems |
| ELE233 | Automatic Control Systems |
| ELE338 | Wireless Communication Networks |

Elective (E3)

| | |
|--------|------------------------------------|
| CSE271 | Introduction to Parallel Computing |
| CSE281 | Image Processing |
| CSE382 | Computer Graphics |
| AIE231 | Neural Networks |

Elective (E4)

| | |
|--------|-------------------------------------|
| CSE311 | Design of Compilers |
| CSE322 | Big Data Analytics 1 |
| CSE335 | Real Time & Embedded Systems Design |
| CSE383 | Computer Vision |

Elective (E5)

| | |
|--------|---------------------------|
| AIE322 | Advanced Machine Learning |
| AIE323 | Data Mining |
| AIE332 | Deep Learning |
| AIE351 | Robotics Design |

Elective (E6)

| | |
|--------|--------------------------------|
| CSE272 | Parallel & Distributed Systems |
| CSE425 | Big Data Analytics 2 |
| CSE448 | Cyber Forensics |
| BMD311 | Introduction to Bioinformatics |