



EGYPTIAN NATIONAL UNIVERSITIES

مشروع إنشاء الجامعات المصرية الأهلية

جامعة العلمين الدولية

ALALAMEIN INTERNATIONAL UNIVERSITY



## Artificial Intelligence Engineering Program

## برنامج هندسة الذكاء الاصطناعي

### 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   |
|          | MAT212 | Linear Algebra                      | 2   | 0   | 2   | 0   | 4     | 3  | 150 | 6    |



EGYPTIAN NATIONAL UNIVERSITIES

مشروع إنشاء الجامعات المصرية الأهلية

جامعة العلمين الدولية

ALALAMEIN INTERNATIONAL UNIVERSITY



| Semester | Code   | Course Name   | LCT | LAB | TUT | OTH | CNTCT | CH | SWL | ECTS |
|----------|--------|---|-----|-----|-----|-----|-------|----|-----|------|
| 3        | 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    |
|          | AIE291 | Field Training 1 in Artificial Intelligence 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    |
|          | CSE251 | Software Engineering                                    | 2   | 2   | 1   | 0   | 5     | 3  | 180 | 6    |
|          | CSE261 | Computer Networks                                       | 2   | 2   | 1   | 0   | 5     | 3  | 165 | 6    |



EGYPTIAN NATIONAL UNIVERSITIES

مشروع إنشاء الجامعات المصرية الأهلية

جامعة العلمين الدولية

ALALAMEIN INTERNATIONAL UNIVERSITY



| Semester | Code   | Course Name   | LCT | LAB | TUT | OTH | CNTCT     | CH        | SWL        | ECTS       |
|----------|--------|---|-----|-----|-----|-----|-----------|-----------|------------|------------|
|          | CSE281 | Image Processing  | 2   | 2   | 1   | 0   | 5         | 3         | 180        | 6          |
|          | CSE234 | Embedded Systems  | 2   | 2   | 1   | 0   | 5         | 3         | 180        | 6          |
|          |        |   |     |     |     |     | <b>26</b> | <b>16</b> | <b>900</b> | <b>32</b>  |
| 7        | ELE432 | Digital Signal Processing                               | 2   | 1   | 1   | 0   | 4         | 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          |
|          | AIE241 | Natural Language Processing                             | 2   | 2   | 1   | 0   | 5         | 3         | 180        | 6          |
|          | AIE323 | Data Mining   | 2   | 2   | 1   | 0   | 5         | 3         | 180        | 6          |
|          | UE2    | Elective University (2)                                 | 2   | 0   | 0   | 0   | 2         | 2         | 90         | 4          |
|          |        |   |     |     |     |     |           | <b>26</b> | <b>17</b>  | <b>960</b> |
| 8        | CSE383 | Computer Vision   | 2   | 2   | 1   | 0   | 5         | 3         | 180        | 6          |
|          | AIE212 | Knowledge-Based Systems                                 | 2   | 2   | 1   | 0   | 5         | 3         | 180        | 6          |
|          | AIE213 | Optimization Techniques                                 | 3   | 0   | 3   | 0   | 6         | 3         | 180        | 6          |
|          | AIE231 | Neural Networks   | 2   | 2   | 1   | 0   | 5         | 3         | 180        | 6          |
|          | AIE392 | Field Training 2 in Artificial Intelligence Engineering | 2   | 0   | 0   | 0   | 2         | 2         | 60         | 4          |
|          | UC6    | University Requirement (6)                              | 2   | 0   | 0   | 0   | 2         | 2         | 90         | 4          |
|          |        |   |     |     |     |     |           | <b>25</b> | <b>16</b>  | <b>870</b> |
| 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          |
|          | AIE351 | Robotics Design   | 2   | 2   | 1   | 0   | 5         | 3         | 180        | 6          |
|          | AIE493 | Graduation Project 1                                    | 2   | 3   | 0   | 0   | 5         | 3         | 180        | 6          |
|          | UC7    | University Requirement (7)                              | 2   | 0   | 0   | 0   | 2         | 2         | 90         | 4          |



EGYPTIAN NATIONAL UNIVERSITIES

مشروع إنشاء الجامعات المصرية الأهلية

جامعة العلمين الدولية

ALALAMEIN INTERNATIONAL UNIVERSITY



| Semester | Code   | Course Name             | LCT | LAB | TUT | OTH | CNTCT | CH  | SWL  | ECTS |
|----------|--------|-------------------------|-----|-----|-----|-----|-------|-----|------|------|
|          |        |                         |     |     |     |     | 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    |
|          | AIE332 | Deep Learning           | 2   | 2   | 1   | 0   | 5     | 3   | 180  | 6    |
|          | AIE494 | 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  |
|          |        |                         |     |     |     |     | 240   | 157 | 8670 | 312  |



EGYPTIAN NATIONAL UNIVERSITIES

مشروع إنشاء الجامعات المصرية الأهلية

جامعة العلمين الدولية

ALALAMEIN INTERNATIONAL UNIVERSITY



### 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)

|        |                                    |
|--------|------------------------------------|
| CSE211 | Web Programming                    |
| CSE271 | Introduction to Parallel Computing |
| CSE272 | Parallel & Distributed Systems     |
| CSE322 | Big Data Analytics 1               |
| CSE363 | Cloud Computing                    |
| CSE344 | Introduction to Cyber Security     |
| CSE382 | Computer Graphics                  |

### Elective (E4)

|        |  |
|--------|--|
| CSE335 | Real Time & Embedded Systems Design      |
| CSE446 | Information & Computer Networks Security |
| CSE464 | Internet of things                       |
| CSE475 | High Performance Computing               |
| CSE485 | Computer Games Theory                    |
| CSE487 | Mixed & Augmented Reality                |
| CSE488 | Visualization & Animation                |
| AIE314 | AI-Based Programming                     |

### Elective (E5)

|        |  |
|--------|--|
| AIE315 | Computational Logic                          |
| AIE316 | Evolutionary Algorithms                      |
| AIE322 | Advanced Machine Learning                    |
| AIE342 | Advanced Methods for Data Analysis           |
| AIE343 | Machine Learning for Text Mining             |
| AIE417 | Selected Topics in Artificial Intelligence 1 |
| AIE424 | Intelligent Decision Support Systems         |
| AIE425 | Intelligent Recommender Systems              |
| AIE444 | Question Answering Systems                   |

### Elective (E6)

|        |  |
|--------|--|
| AIE418 | Selected Topics in Artificial Intelligence 2 |
| AIE426 | Decision Making Under Uncertainty            |
| AIE427 | Statistical Pattern Recognition              |
| AIE452 | Cognitive Robotics                           |
| AIE453 | Planning Techniques for Robotics             |
| AIE454 | Robot Kinematics & Dynamics                  |
| AIE455 | Robot Mapping & Localization                 |
| AIE456 | Human Robot Interaction                      |
| AIE457 | Mobile Robot Development                     |