

1.1 GUIDELINES:

Program duration (2 Years Min. – 5 Years Max.). The proposed Master's Program is developed following the ECTS (European Credit Transfer System) with equivalence in the Egyptian Credit Hour System to support effective. Hence the proposed Master's program is developed as an integrated program composed of:

- ❖ Courses representing 90 ECTS credits = 24 Egyptian Credit Hours
- ❖ Thesis representing 30 ECTS credits = 12 Egyptian Credit Hours

The master program is subdivided into group of courses as follows:

- ❖ Firstly 3 core courses (9 credit hours). These course are mandatory for all the program participants.
- ❖ Secondly, the student is to choose one of the following two branches:
 - 1) Energy Management and Control systems.
 - 2) Smart Industrial Energy Systems.

Each branch has 6 elective courses (3 credit hours each). The student must satisfy at least 3 of these courses (9 credit hours).

- ❖ Thirdly, the student must satisfy at least 2 courses (6 credit hours) from Elective common courses module, which includes 11 courses that may serve both branches.
- ❖ Fourthly, the student is to engage 12 credit hours of scientific research divided as follows; 3 Credit hours for Research Methods course, 3 credit hours for Thesis I, and 6 credit hours for Thesis II.

The program academic advisor is to guide students for the proper branch based on their previous studies. The graduate of electric, control and mechanical engineering is preferred to follow the branch of "Smart Industrial Engineering Systems", while the graduates of computer, electronics, Industrial Engineering is preferred to follow the branch of "Energy Management and Control systems".

If the applicant is not qualified enough for the program then he/she must take 1-3 preliminary undergraduate courses to fulfill the requirements of the program

M.Sc. in Smart Control Systems and Energy Management

Program Structure

CORE COURSES:

Course Code	Course Title	Credit Hours
SM7001	Optimization Algorithms (3Cr)	3
SM7002	Advanced Digital measurements (3Cr),	3
SM7003	Energy Management Systems (3Cr),	3
Subtotal	3 Courses * 3 Credit Hours	9

ELECTIVE PACKAGE (I) : ENERGY MANAGEMENT AND CONTROL SYSTEMS

Course Code	Course Title	Credit Hours
SM7101	Fault Tolerance Control for smart systems (3Cr),	3
SM7102	Industrial Project Management (3Cr)	3
SM7103	Integrated Manufacturing Systems(3Cr),	3
SM7104	Energy Quality systems (3Cr),	3
SM7105	Smart Facility Planning systems (3Cr),	3
SM7106	Robotics Modelling and Control (3Cr)	3
Elective Subtotal	Chose 3 course with 9 Cr	9

ELECTIVE PACKAGE (II) : SMART INDUSTRIAL ENERGY SYSTEMS

Course Code	Course Title	Credit Hours
SM7201	Waste Heat Recovery (3Cr),	3
SM7202	New technologies in HVAC systems (3Cr),	3
SM7203	Industrial Machine design (3Cr),	3
SM7204	Smart Grids for Energy Saving (3Cr),	3
SM7205	Power Station system design (3Cr),	3
SM7206	Thermal Energy Systems (3Cr),	3
Elective Subtotal	Chose 3 course with 9 Cr	9

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ELECTIVE PACKAGE (III) : ELECTIVE COMMON COURSES

Course Code	Course Title	Credit Hours
SM7301	Autonomous smart systems (3Cr),	3
SM7302	Advanced Smart Materials (3Cr),	3
SM7303	Intelligent Systems (3Cr),	3
SM7304	Green Cloud Computing (3Cr)	3
SM7305	Operation Research (3Cr)	3
SM7306	Low Cost Automated Systems (3Cr),	3
SM7307	Renewable Energy Resources (3Cr),	3
SM7308	Real-time Power Systems hardware setups (3Cr),	3
SM7309	Building Management Systems (3Cr),	3
SM7310	System Modeling and Simulation (3Cr),	3
SM7311	Industrial Robotics (3Cr)	3
Elective Subtotal	Chose 2 course with 6Cr	6

RESEARCH THESIS:

Course Code	Course Title	Credit Hours
SM7401	Research Methods	3
SM7402	Master's Research Thesis (Part 1)	3
SM7403	Master's Research Thesis (Part 2)	6
Subtotal	2 Parts * 6 Credit Hours	12

Total	36
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