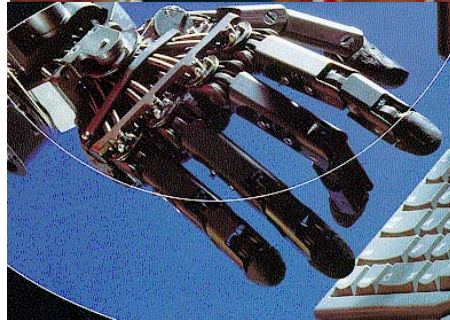
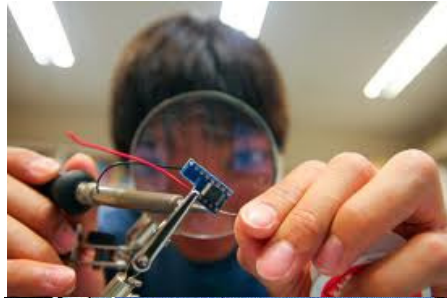
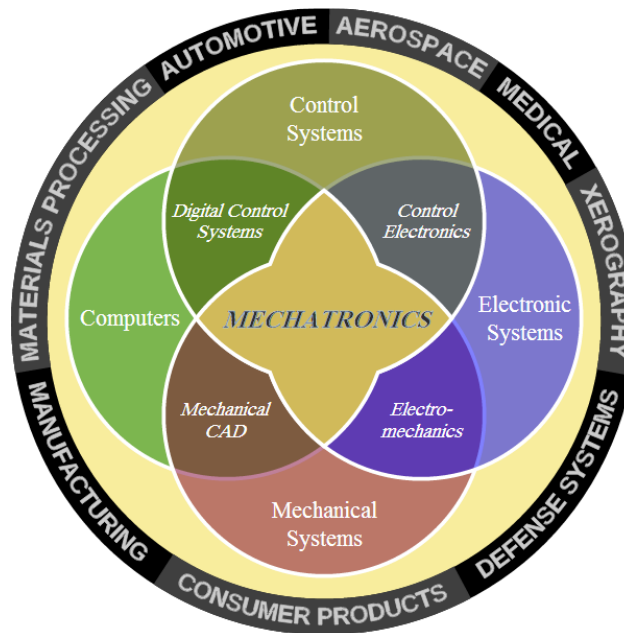




**Automation and
Mechatronics Engineering
Program**

Your Path Towards Success





What is Mechatronics?

Mechatronics combines the principles of mechanical, computer, electronic, and control engineering into a unified whole. Mechatronics engineers design everything from smartphones, cars, robots, medical imaging devices and manufacturing tools, to the International Space Station. They also help form a bridge of communication between the different disciplines. The fusion of the various disciplines in mechatronics breaks down the artificial barriers between the separate disciplines.

Ain Shams University: A Long History in Education & Research

The Automation and Mechatronics Engineering program at Ain Shams University has been established and scheduled to open in Spring 2014 semester. The Faculty of Engineering has world-renowned professors who have won numerous teaching and research awards. Modern labs all over the faculty serve the program enabling professional hands-on training.

The Program

The Automation and Mechatronics Engineering program is a five year engineering program providing an outstanding student and learning experience. The program.

The program's curriculum is focused in providing a strong foundation on the fundamentals of the engineering design process complemented by a strong technical competency.

Technical projects done every year allow students to practice their engineering skills with real hands on experience.

Program Goals & Objectives

The aim of the program is to graduate automation & mechatronics engineers who are capable of penetrating Egyptian and global markets with their knowledge, skills,



professionalism, and ethics. This program will:

1. Enrich the student's basic theoretical and practical knowledge of mechatronic system components, and design methodologies of mechatronic systems.
2. Develop the student's ability to use the state-of-the-art technologies to find affordable, reliable and innovative solutions to improve our daily quality of life.
3. Develop the student's ability to synergize a multidisciplinary team during the analysis, design and implementation phases of mechatronics engineering projects, while applying ethical standards and environmental considerations.
4. Design, develop and maintain safety critical mechatronic systems.
5. Improve the student's management skills to be able to effectively contribute and compete in local, regional and international markets.
6. Provide four different fields in which the students in this program can specialize in. These four fields are: Autotronics, Biomechatronics, Industrial Automation, and Nanomechatronics.

Autotronics

The Autotronics field is the one that merges both the fields of AUTOMobile and elecTRONIC. Modern cars are as much electronic as they are mechanical, and have means to monitor and manage most of the major systems in the vehicle. Engineers graduating with this major use the latest advancements in electronics, computer systems, and communications to add complex features to modern vehicles. Thanks to Autotronics engineers we currently have vehicles with increased safety features (brake systems, ESP- Electronic Stability Program), increased comfort (automatic transmission), driver assistance systems (navigation, night vision, blind spot detection) and that comply with legal requirements (reducing the emission of pollutants by intelligent engine control).



Biomechatronics

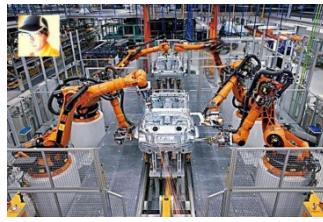


Biomechatronics is an applied field that aims to integrate mechanical elements, electronics, and parts of biological organisms. It also encompasses the fields of robotics and neuroscience. One of the applications of this field is the creation of devices that interact with human muscle, skeleton or nervous system. Biomechatronic systems include biosensors that detect what the user wants to do or their intentions and motions. These intentions are then passed on to actuators (artificial muscles) to produce the force or movement. This is a very hot topic with huge potential market.

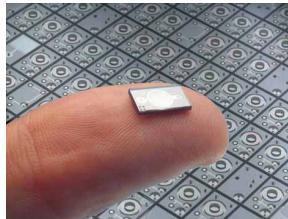
Industrial Automation

Industrial automation is a growing field that focuses on the use of robotic devices to complete manufacturing tasks. In the age of computers, it is becoming increasingly important in the manufacturing process because computerized or robotic machines are capable of handling repetitive

tasks quickly and efficiently. Industrial automation engineers design, implement, and operate these robotic machining devices that communicate with each other to produce more complex products in cheaper and more reliable ways.



Nanomechatronics



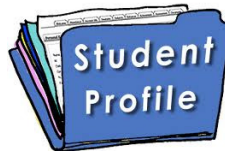
When we combine the two words nano and mechatronics, we can say that nanomechatronics that are mechanical systems controlled electrically on the nano scale. Nanomechatronics

is the field in which engineers focus in designing and fabricating complete sensors, actuators and mechatronic systems on tiny chips that are used in all kind of gadgets that we use on a daily basis such as Cell phones, MP3 players, game consoles (Wii) and military enabling devices.

Mechatronics Student Profile

This program will:

1. Enrich the student's basic theoretical and practical knowledge of mechatronic system components, and design methodologies of mechatronic systems.
2. Develop the student's ability to use the state-of-the-art technologies to find affordable, reliable and innovative solutions to improve our daily quality of life.
3. Develop the student's ability to work within a multidisciplinary team during the analysis, design and implementation phases of mechatronics engineering projects, while applying ethical standards and environmental considerations.
4. Develop the student's ability to conduct Research and Development (R&D) activities to create



innovative mechatronic solutions having direct impact on industrial, commercial, and social scales

5. Enrich the student's management and business skills to be able to effectively contribute and compete in local, regional and international markets
6. Setup and operate automated and/or autonomous production lines which are based on embedded systems, PLCs and SCADA systems.
7. Carry out the modern troubleshooting and maintenance techniques relevant to Machine Health Monitoring (MHM) for both hardware and software or combined mechatronic products.
8. Design, develop, and maintain safety critical mechatronic systems.

Mechatronics Job Market



There is a huge demand in industry for people with Mechatronics education and training, as indicated by the local and international job market specialists. There is a much demand mainly because these engineers can work anywhere they want.

Mechatronics engineers have the privilege of diversified knowledge in mechanical systems, electronics, computer systems, and automotives, and can work on developing new products as soon as they enter the workforce.

As said by one of the industry leaders, "It makes sense to hire an engineer who understands all areas of the field. They will come into industry well-equipped and not have to be trained on the job."

Mechatronics engineers are in high demand in the automotive industry, manufacturing industry applying automation, biomechatronics, and appliance manufacturers. They are also valuable to small technology companies that are developing new products and gadgets that are pushing the marketplace to new directions.