Environmental Monitoring, Modelling and Training Research Facilities at AASTMT

The Environmental Monitoring, Modelling and Training Research Facilities at AASTMT are advanced and fully- equipped facilities dedicated for comprehensive study of environmental, energy and climate change research parameters. Underground, postgraduate Students and faculty researchers conduct rigorous research in the sampling, analysis, and data interpretation. It fosters collaboration with national and international research institutions, government bodies, and industry stakeholder to encourage information exchange, generate solutions to global environmental issues and promote sustainable practices within and beyond the AASTMT community. They carry all environmental research studies and consultations as well as training.

Sustainability has been at the heart of the Arab for a very long time. Our 2021-2026 strategic plan has dedicated one of its four main goals to sustainability, where The AASTMT commits to fulfil its societal responsibility and to align itself to the SDGs,

As a university, The Arab Academy has a particular commitment to educate the next generation, to create knowledge, and to lead by example.

Environmental Monitoring and Climate Change Laboratory

https://aast.edu/en/research/emccl.php

The aim for the establishment of the laboratory is to promote and improve research activities in AASTMT and help to conduct consultancies as part of extension services to the industries.

The lab specializes to carry out the following activities and studies:

- Environmental impact assessments,
- Air quality analysis,
- Water quality analysis,
- Wastewater analysis,
- Meteorological and climate data collection,
- Climate & ocean modeling.
- Training.
- Provide laboratory environment measurements within health facilities and industries.
- Provide measurements of the laboratory environment within factories and industrial cities.
- Provide measurements of the laboratory environment within the administrative buildings and commercial and educational projects.

The Lab. Is well equipped with the following instruments:

• Air Quality Instruments: Portable Outdoor Air Quality Monitors … Brand: aeroQUAL
• Air Quality Instruments: Digital Sound level meter: • Casella 24x / 62x/Microdust Pro
• Air Quality Instruments: Heat stress
• AERMOD View air dispersion modeling
• SimCLIM v 4.x for Desktop
• SimCLIM for ArcGIS Suite
• SimCLIM EGYPT country wide Additional sets
• Water Quality Instruments: Physical Properties: • Senso Direct 150
• Water Quality Instruments: Chemical Properties: Portable photometer single & Multi Testing: MD 600 & MD 610

The Aquaculture Research Center

https://aast.edu/en/research/arc.php

The Aquaculture Research Center is well equipped with the standard measurement and development equipment including:

- A small experimental farm for growing non-traditional crops like Castor, Jatropha, Moringa, Neem and Aloe vera.
- A greenhouse for the aquaponics system for growing vegetables with tilapia culture.
- Agricultural greenhouse for production of algal species (Spirulina). The unit produce about 1 kg of dried Spirulina powder per month.
- Algal incubator
- Spectrophotometer for water quality studies
- Biodiesel production unit: Equipped with a unit for producing the biodiesel from vegetable oils and algae. The capacity of the unit is 1000 L/day.
- Beside all the basic lab equipment like pH meter, Oxygen meter, Conductivity meter.

The general activities of the Aquaculture Research Center:

- The center participates in a scientific research project “The alliance of the Egyptian pharmaceutical products” funded by the Egyptian Academy for Scientific Research.
- The center carries out scientific research projects in the field of aquaculture and marine living products.
- The center carries out training courses in the field of “Biodiesel production”.
- The center cooperates with a high school for building aquaponics systems
- Cooperate with a private agriculture company to establish the first spirulina farm in Egypt since 2018.

Environmental Analysis Laboratory

https://aast.edu/en/complexes/isc/contenttemp.php?page_id=21200003

The environmental Analysis laboratory undertakes physical and chemical analysis and tests for most of the environmental samples. The laboratory is also used as a tool for research in several fields, in addition to its role in assisting consultations training technical services.

In 1996, the laboratory initiated its work in co-operation with the Egyptian Environmental Affairs Agency (EEAA) by applying the "Fingerprinting Technique". This was done by using the four different standard methods of the American Society for Testing Materials (ASTM). These standard methods compare the spilled oil samples with other oil samples from suspected sources.

To adapt with the developmental policy used by the Crisis and Disaster Management Systems to maintain the state of the art technologies, the laboratory was also upgraded and updated to achieve the main objectives in different fields.

The laboratory is well equipped with the latest instruments required for research and analysis. All the standard tests in the fields of industry, research and environmental studies may also be performed for scientific institutes and organizations working in the field of environment.

A. *Chromatography Lab.*
   - Gas Chromatograph (Mass Spectrometer) (GC/MS) (PE-Clarus 500)
   - Gas Chromatograph (PE-Autosystem):
     - Flame Ionization Detector (GC/FID)
     - Electron Capture Detector (GC/ECD)
   - High Performance Liquid Chromatograph:
     - Ultraviolet / visible Detector
     - Fluorescence Detector

B. *Spectroscopy Lab.*
   - Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) (PE-Optima 2100)
   - Infrared Spectrometer (Spectrum One) with Oil Express and other accessories for different types of samples
   - Fluorescence Spectrometer
   - UV/VIS Spectrometer (AQUA-MATE) for water analysis

C. *Physical Properties Instruments*
   - Closed Cup Koehler Flash Point Tester
   - Pour and Cloud Point Chamber with thermometers and tubes
   - API Certified Hydrometer with built in thermometer for petroleum densities

Environment Protection and Crisis Management Simulator

https://aast.edu/en/complexes/isc/contenttemp.php?page_id=21200002

This Simulator was designed to fulfill the requirements for Crisis and Disaster Management using the Incident Command System (ICS) as a management adhoc organization. The system was established, developed and used in Canada, United States and Europe.

The Crisis and Disaster Management Simulator is a complete, fully automated system used for training & managing real-time emergency response dealing with a variety of natural and man-made crisis according to a pre-designed contingency plan.

Different types of crises scenarios can be simulated through the system, which contains a continuously updated database and various models.

Energy Research Unit

https://aast.edu/en/research/contenttemp.php?page_id=47300111

Due to the growing demand for energy and the increasing shortage of traditional energy sources and the accompanying problems, the trend to use renewable and alternative energies, with the necessity of energy conservation, is an imperative, locally and internationally.

The Energy Research Unit was established on February 18, 2014, at the College of Engineering in Abi Qir, to provide solutions appropriate to the nature of the applicant, whether at the academy's level in all its branches or through its role in community service.

Objectives

- Link the researches related to energy with the current needs and future plan of the AAST and community
- Integrate and support the research through the encouragement of multi-discipline project to deliver an innovative solution
- Make AAST as a center of excellence in the field of energy

Activities:

- The establishment of an energy committee at the academy level
- Conducting the necessary studies for energy conservation in a number of buildings in the Academy Via:
  A. Providing advice, conducting the necessary studies, and using LED technology.
  B. 2- Conducting the necessary studies for the use of solar PV cells in a number of the academy's headquarters.
  C. Evaluating a study presented on the use of solar heaters in hotel buildings at the Abu-Qir site and providing advice.
  D. Do necessary studies to monitor Loads.
- Work on the **research** project funded by the European Union between the Academy and some Egyptian and European colleges, and among the project's:
  1- Establishing a house of expertise in the field of new and renewable energy to be the headquarters of the energy unit in the college.
  2- Establishing a master's program in energy.

Oil Spill Combating Training Center

https://aast.edu/en/complexes/isc/contenttemp.php?page_id=21200014

The Oil Spill Combating Center (OSCC) is one of the major components of the disaster and crisis management systems. It includes almost all types of equipment used in combating oil spills and fulfills the requirements of OPRC IMO Model Courses.

The center is located near the beach of Abu Qir bay in Alexandria, which facilitates practical exercises and handling of equipment taking into consideration the highest standards of human safety.

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OSCC Facilities:

OSCC incorporates combating equipment that are used for training purposes and may be summarized as follows:

- Four boats for deploying equipment and running different booms configurations.
- An Oil basin for deploying skimmers and measuring their efficiencies.
- Different types of booms of different lengths.
- Different types of skimmers.
- Dispersants spraying equipment.
- Different types of sorbents.
- Supporting equipment such as pumps and auxiliary facilities.

International Research Projects Center

https://aast.edu/en/centers/iprc/contenttemp.php?page_id=52500006

The Arab Academy for Science Technology and Maritime Transport contributes in many of the international Research projects, from here, the role of the International Research Projects center is to coordinate between the Academy and the funding entities on several levels.

Contribution of establishing research projects that help in solving local/regional problems according to the international standards, as well as helping in providing new understanding for the international research projects.

Maritime Research & Consultation Center

https://aast.edu/en/centers/mrcc/

The global economic schemes are witnessing a number of new and modern evolutions resulted in new concepts as well as new technological and operational applications affected the evolvement of transportation in general and the maritime transport in particular.

Accordingly, the different interested stakeholders in the maritime transport sector at a global scale are seeking to develop a strategical thrived master plan aiming at developing the entire maritime transport platform in addition to providing international logistic services to cope with developmental roadmaps of different countries around the world which seek to achieve sustainable development across different sectors.

Through its undeniable outstanding and ongoing role that it carried out all over the years the MRCC successfully set the different development plans and programs in consideration with the international trends to support the national development strategies, enhancing logistic activities, focusing on different aspects of sustainable development in the maritime transport ,as well as turning our seaports to proudly be "Green Ports" ,enjoying an environmental friendly business framework till they finally reach to the new generation in ports the "SMART PORTS" whether in Egypt or in the Arab region as well.

Moreover, the MRCC as one of the main successful bodies of the Arab Academy for Science, Technology and Maritime Transport stands as the fast evolving pillar of applied researches that by their turn serve and benefit the Egyptian, Arabian and African maritime transport sector. MRCC had a great role in developing maritime sector since its establishment by 1984, through the accomplishment of more than 400 studies and projects in the technical, engineering, information technology, economic and managerial fields. All had led to enhance the Egyptian and quite few of the Arabian seaports compared to the global hub ports enjoying a proper market share that economically and geographically suite those countries.

Center of Entrepreneurship

https://aast.edu/en/centers/Entrepreneurship/

AASTMT Entrepreneurship Center was established by the academy in 2015 with the main focus of empowering Arab youth to create a sustainable growing ecosystem in the Arab region & Africa.

We aim to build generations of young entrepreneurs & change agents who reshape the social & economic status of the Arab region & Africa by enabling an environment of innovation, growth, support & mentorship for private businesses in AAST.

Regional Informatics Center

https://aast.edu/en/centers/ric/

RIC is a division of the Arab Academy for Science and Technology founded in 2001 and located in Alexandria, Egypt.

The Academy is aware that this new century has brought with it enormous revolutionary changes and developments in all field of human knowledge specifically the field of informatics under the inspiring leadership, enthusiasm and drive of Dr. Gamal Mokhtar

The idea of establishing the Regional Informatics Center (RIC) originated from the desire to catch up with the amazing development in this field, to help in promoting the minds and talents of the AASTMT students, and the necessity of creating a broad base of distinguished students who can catch up with the increasing acceleration in the development of Informatics and Robotics worldwide.

Maritime Postgraduate Studies Institute

https://aast.edu/en/institutes/mpi/

MPI is the leading institute in providing highly maritime postgraduate programs that assist researchers who work in various maritime Industry sectors at the local, regional, and international levels.

MPI maintaining competitive advantages and creating a challenging scientific environment that works to develop the skills and the ability of students in field of scientific research.

Also create a new generation of specialists and researchers who are cope with the requirements of the industry of current and expected era.

International Transport & Logistics Institute

https://aast.edu/en/institutes/itli/

The house of supply chain excellence- adopts continuous improvement to create, preserve, and disseminate applied knowledge with excellence through graduates& education, research, training, & consultancy services in the fields of international transport, logistics & law

Courses: Need help with your course schedule? Our team of professionals is here to support you with any course changes, any issues, timetable clashes or anything else that you are unsure about or need help with. We've got you covered so you can focus on your education.
Workshops: Save your space on our Professional Workshops. Study with like-minded creatives and turn your passion into a career.
Webinars: Meet Our Instructors: In this reel, we are introducing part of the highly experienced faculty members at ITLI who are dedicated to providing exceptional education to elevate your studies to a greater level in the areas of International Transportation, Logistics and Trade Management, Law, and Supply Chain.

Maritime Safety Institute

https://aast.edu/en/institutes/msi/contenttemp.php?page_id=6900005

The Maritime safety institute (MSI) is dedicated to learning and competency development for the offshore and maritime industry. To achieve the goal of improving the knowledge and performance of offshore and maritime personnel, MSI operates in compliance with the premier quality standard (DNV, ISO 9001:2008) to implement international training standards such as the International Maritime Organization, offshore petroleum industry training organization (OPITO) and other globally recognized instruments.

MSI employs highly motivated lecturer and instructors with significant training and operational experience in Personal Safety, Survival training, Escape of helicopter under water training, Prevention & Fire fighting and Search and rescue operation. This expertise equipped with modern teaching aids, training equipment and simulators (in cooperation with Survival System Canada). Also the institute establishes specialized marine courses required by shipping companies, port and offshore installations. MSI can work with your safety and training department to design courses according to your specific needs in addition many of MSI courses can be offered at your site (Minimum number of participants required).

Port Training Institute

https://aast.edu/en/institutes/pti/

Port training institute was established on 26th of July 1982, as an affiliated institute to the Arab Academy for Science, technology & Maritime Transport (AASTMT). A committee comprising the chairman of port Authorities and Maritime companies defined the focal mission of the Institute as follows: "Training and Upgrading the Maritime Sector Personal"

Oil and Gas Institute

https://aast.edu/en/institutes/oil_gas/contenttemp.php?page_id=45900001

AASTMT is establishing the Oil and Gas Institute which will provide both training and consultancy for companies and organizations in the petroleum field provided that such training courses should be internationally approved.

The Program shall provide the following:

- Training Courses
- Consultancy and Technical Solutions
- Research and development

Sea Training Institute

https://aast.edu/en/institutes/sti/index.php

STI is international recognized training programs for nautical engineer and marine electro-technique offers for 5th and 6th semesters equivalent to one-year sea service, we offer high calibre training for maritime industries

On board training vessel: Professional training to meet National and International standard training

Training trips: Aida 4 vessel goes through standard sea Trainings for our cadets

Deck and Engineer Cadets: STI are preparing experts future leaderships of global maritime industry

Information Technology Unit

https://aast.edu/en/complexes/isc/contenttemp.php?page_id=21200015

Geospatial Information Technology enriches environmental applications, such as urban planning, assessment of biodiversity, disaster management and land administration. In addition, now it plays an important role in higher education and research. The Geospatial Information Technology (GIT) Unit is established to support the Environment Protection and Crisis Management Center, through encouraging and facilitating the use of Geographic Information Systems (GIS) and Remote Sensing within the Academy, the ISC and the community.

The Unit General Services:

The unit's activities are on consulting basis and service oriented to promote Research and Development (R&D)

- Database standard templates production.
- Spatial data archive, storage and research.
- Spatial data georeferenced and conversion.
- Remote Sensing Services.
- Hyperspectral / multispectral imagery analysis.

- Habitat and land use/cover mapping.
- Ground control and check point surveys.
- Photo interpretation.
- Change Detection.
- Base map drawing, Map Production a Map Analysis.
- Project Assessment.

The Industry Service Complex (ISC)

https://aast.edu/en/complexes/is-complex/

Based on the Arabic and regional role for the Arab Academy for Science, Technology and Maritime Transport (AASTMT), it established The Industry Service Complex (ISC) in 2004. It aims at facilitating the process of transferring modern technology and providing the different industrial sectors with consultancy and highly qualified technical staff, that contributes in developing the Arab communities. This is through the Research and Development Unit which implements a lot of projects by adopting the modern international technology and performing them by Egyptian hands with a competitive quality.

ISC Departments:

- Training Department
- Health and Safety Department
- Research and Project Development Department