MECHANICAL & MARINE

ENGINEERING COURSES

Contents

Arab Academy for Science, Technology and Maritime Transport

Training Course Information Form

Course Information

Course Name: **Heat Exchanger Design and Operation**

Institute/Centre: **College of Engineering** **Department:** **Mechanical & Marine**

Type: ❑ Program ☑ Course ❑ Workshop

Course Duration: ☑ 5 days ❑ 3 days ❑ 1 days ❑ Other: ----------

Course Conducted: ❑ Local ☑ International
Indicate: ----------

Course Venue:

Course Language: ☑ English ☑ Arabic ❑ Both ❑ Other: ----------

Course Description

Course Outlines:

- Types and Applications of Heat Exchangers; Thermal Design of Shell-and-Tube Exchangers: Typical Causes of Fouling; Selection of Fouling Resistances; Extended Surfaces: When to Use Extended Surfaces; Calculation of Fin Efficiencies
- Air-cooled Heat Exchangers: Forces vs. Induced Draft; Advantages/Disadvantages vs. Water-Cooled Exchangers; Compact Heat Exchangers E-Ntu Method; Gasketed Plate; Spiral Plate; Plate-Fin
- Reboilers and Vaporizers Pool Boiling; Flow Boiling Guidance on Reboiler Selection Condensers Pure Component Condensation; Partial Condensation; Simultaneous Heat and Mass Transfer; Guidance on Selection of Condensers; Operating Problems in Heat Exchangers

Course Objectives:

Explore recent developments in heat exchangers, thermal design of shell and tube exchangers, air-cooled heat exchangers and reboilers. Also learn how to diagnose and correct operating problems.

Learning outcomes:

- Examine in detail shell-and-tube heat exchanger technology—with practical tips on how to minimize fouling and improve chances of trouble-free operation.
- Cover other types of exchangers, including gasketed plate, spiral plate, and aircooled equipment.
- Gain a better understanding of the thermal design of shell-and-tube heaters, coolers, column reboilers, and condensers.
- Learn how to troubleshoot, diagnose, and correct operating problems, particularly distillation column reboilers and condensers.

Course includes: ■Theoretical ■ Tutorial ■Laboratory ❑ Workshop ❑ Site Visit

Course Prerequisites:

Basic Knowledge of Heat Exchangers

Who should attend:

This course is ideal for chemical and mechanical engineers who are engaged in plant operations, technical services, and project design; or with assignments involving heat exchanger sizing, specification, or operation.

Training Course Information form

Course References:

No. of Participants/course: ❑5-10 ■10-15 ❑15-20 ❑Other: ----------

Qualifications of Participants:

- Engineers
- Teamwork skills

No. of Lecturer: ■1 ❑2 ❑3

No. of Assistance: ■1 ❑2 ❑3

Course Facilities

❑ White Board ❑ V. Projector ❑Data show ❑ PC ❑ Manual ❑ Handouts
❑ Books ❑ Handouts ❑Flip charts ❑ S/W ❑Other: ----------

Course Evaluation

❑ Written Examination ❑ Written Report(s) ❑ Oral Presentation ■Attendance
❑ Delegates Participation

Certificate Issue: ❑ Local Premises ■ AASTMT ❑ International

Course Registration

Registration: ■AAST Admission Registration ❑ Online ❑ Other: ----------

Sponsor: ❑ Individual ❑ Funded By: 8000 L.E Egyptian Company

Fee's: ❑ L.E. 800 for Egyptian ❑ $ 200 for non Egyptian ❑ Other: 2000 $ Non Egyptian Company

Documents required: ❑ Registration form ■ ID/Passport copy ❑ Photo

Arab Academy for Science, Technology and Maritime Transport

Training Course Information Form

Course Information

Course Name: **Mechanical Insulation Design and Technology**

Institute/Centre: **Department:**

Type: ❑ Program ■Course ❑ Workshop

Course Duration: ■ 5 days ❑ 3 days ❑ 1 days ❑ Other: ----------

Course Conducted: ■Local ■International
Indicate: ----------

Course Venue:

Course Language: ■English ■Arabic ❑ Both ❑ Other: ----------

Course Description

Course Outlines:

Insulation Materials Specifications

New installation technologies, design methods and tolls that can be utilized to quantify the operational economical and environmental advantages of a well-design and maintained insulated system.

Insulation Software

Course Objectives:

Whether a new construction or maintenance project, the insulation system is a critical component of optimum performance and one that must be addressed in a time of rising energy costs and environmental compliance issues This course will provide information on how to correctly design and specify an insulation system for equipment, ducting, piping, vessels and boilers found in commercial and industrial processes and distribution systems.

Learning outcomes:
will walk away from this course with a definite appreciation for the role insulation plays in the process piping, pressure vessels and boilers as well as a host of other applications. Attendees will leave with the tools and knowledge to improve the integrity of their insulation systems and specifications and how to quantify energy savings, emission reduction and improved operational performance.

Course includes: ■Theoretical ■Tutorial ❑ Laboratory ❑ Workshop ❑ Site Visit

Course Prerequisites:

None

Who should attend:

This course will be helpful to professionals working in commercial or industrial building, chemical and chemical processing, energy production and conservation, food processing, manufacturing, petroleum, oil, petrochemical, plastics, power plants, pulp and paper industry and HVAC systems.

Course References:

NAIMA 3E Plus Insulation Thickness Software

NIA Website Resource Guide

No. of Participants/course: ❑5-10 ■10-15 ❑15-20 ❑Other: ----------

Qualifications of Participants:
None

No. of Lecturer: ■1 ❑2 ❑3

No. of Assistance: ❑1 ❑2 ❑3

Course Facilities

❑ White Board ❑ V. Projector ■Data show ❑ PC ❑ Manual ■Handouts
❑ Books ❑ Handouts ❑Flip charts ❑ S/W ❑Other: ----------

Course Evaluation

❑ Written Examination ❑ Written Report(s) ❑ Oral Presentation ■Attendance
■Delegates Participation

Certificate Issue: ❑ Local Premises ■AASTMT ❑ International

Course Registration

Registration: ■AAST Admission Registration ❑ Online ❑ Other: ----------

Sponsor: ❑ Individual ❑ Funded By: 8000 L.E Egyptian Company

Fee's: ❑ L.E. 800 for Egyptian ❑ $ 200 for non Egyptian ❑ Other: 2000 $ Non Egyptian Company

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Arab Academy for Science, Technology and Maritime Transport

Training Course Information Form

Course Information

Course Name: **Heating, Ventilating & Air-Conditioning Systems: Sizing and Design**

Institute/Centre: **College of Eng.** **Department:** **Mechanical and Marine**

Type: ❑ Program ■ Course ❑ Workshop

Course Duration: ■5 days ❑ 3 days ❑ 1 days ❑ Other: ----------

Course Conducted: ■Local ■International
Indicate: ----------

Course Venue: **AASTMT –[Abukir] Or In House**

Course Language: ■ English ■Arabic ❑ Both ❑ Other: ----------

Course Description

Course Outlines:

Review of fundamentals, Thermodynamics, Properties of air and water, Psychrometrics, Heating and cooling
Humidifying and dehumidifying, Design conditions: indoor & outdoor, Infiltration and ventilation, Heat transfer coefficients
Design heating load estimates, Workshop: heating load estimates, Design cooling load estimates
Workshop on cooling load estimation, Energy estimation, Degree day methods, BIN methods
Detailed methods, Workshop: energy estimation, Equipment and systems, Types and characteristics
Sizing and selection, System analysis, Applied psychrometrics, Multizone, dual duct, variable air volume
Reheat, induction, fan coil units, etc., Problem session: system calculations
Energy conservation techniques, Maintaining indoor air quality, Computer programs for HVAC
Duct design fundamentals

Course Objectives:

Learn state of the art methodology for sizing and selecting HVAC equipment for commercial buildings, as well as issues related to indoor air quality.

Learning outcomes:

- Determine design cooling and heating loads
- Understand the characteristics of various types of HVAC systems
- Evaluate potential energy saving techniques and equipment
- Discover potential solutions to IAQ problems with VAV systems

Course includes: ■Theoretical ■Tutorial ❑ Laboratory ■Workshop ❑ Site Visit

Course Prerequisites:

You should possess a degree in engineering or science or the equivalent experience.

Who should attend:

Designers, Contractors, Manufacturers, Architects, and Engineers who wish to enhance their knowledge of the fundamentals of equipment sizing and energy estimating for heating and air-conditioning systems.

Course References:
ASHRAE Handbook

No. of Participants/course: ❑5-10 ■10-15 ❑15-20 ❑Other: ----------

Qualifications of Participants:
BSc. Or Equivalent

No. of Lecturer: ■1 ❑2 ❑3

No. of Assistance: ■1 ❑2 ❑3

Course Facilities

❑ White Board ❑ V. Projector ■Data show ■PC ❑ Manual ■Handouts
❑ Books ❑ Handouts ❑Flip charts ❑ S/W ❑Other: ----------

Course Evaluation

❑ Written Examination ❑ Written Report(s) ❑ Oral Presentation ■Attendance
■Delegates Participation

Certificate Issue: ❑ Local Premises ■AASTMT ❑ International

Course Registration

Registration: ■AAST Admission Registration ❑ Online ❑ Other: ----------

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Arab Academy for Science, Technology and Maritime Transport

Training Course Information Form

Course Information

Course Name: **Maintenance of Offshore Systems**

Institute/Centre: **College of Eng. & Tech.** **Department:** **Mechanical & Marine**

Type: ❑ Program ❑ Course ❑ Workshop

Course Duration: ❑ 5 days ❑ 3 days ❑ 1 days ❑ Other: ----------

Course Conducted: ❑ Local ❑ International
Indicate: ----------

Course Venue: **College of Engineering and Technology**

Course Language: ❑ English ❑ Arabic ❑ Both ❑ Other: ----------

Course Description

Course Outlines:

- Deterioration of offshore structures.
- Fabrication and installation stages, in-service stage.
- Maintenance strategies and types.
- Underwater work systems.
- Tools, instruments, divers, underwater vehicles.
- Maintenance of jacket structures.
- Maintenance of the topside structures.
- Topside facilities and equipment.
- Maintenance of subsea systems and pipelines

Course Objectives:

- The student should be able to plan , perform and supervise maintenance programmes for offshore structures and subsea systems.

Learning outcomes:

- Work as an offshore maintenance engineer

Course includes: ❑Theoretical ❑Tutorial ❑ Laboratory ❑ Workshop ❑ Site Visit

Course Prerequisites:

Theoretical background or practical experience in offshore engineering.

Who should attend:

- Offshore design engineers
- Offshore construction and maintenance engineers
- Technical managers

Course References:

- An Introduction to Offshore Maintenance (OPL)
- M. Bayliss "Underwater Inspection"
- Offshore Technology Conference Proceedings.

Training Course Information form

No. of Participants/course: ❑5-10 ❑10-15 ❑15-20 ❑Other: ----------

Qualifications of Participants:

- B.Sc. , Marine Engineering, Mechanical Engineering, Civil Engineering.

No. of Lecturer: ❑1 ❑2 ❑3

No. of Assistance: ❑1 ❑2 ❑3

Course Facilities

☑ White Board ☑ V. Projector ☑Data show ☑ PC ☑ Manual ❑ Handouts
❑ Books ❑ Handouts ❑Flip charts ☑ S/W ❑Other: ----------

Course Evaluation

☑ Written Examination ☑ Written Report(s) ☑ Oral Presentation ❑Attendance
❑ Delegates Participation

Certificate Issue: ❑ Local Premises ❑AASTMT ❑ International

Course Registration

Registration: ■AAST Admission Registration ❑ Online ❑ Other: ----------

Sponsor: ❑ Individual ❑ Funded By: 8000 L.E Egyptian Company

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Arab Academy for Science, Technology and Maritime Transport

Training Course Information Form

Course Information

Course Name: **Marine pipeline and Subsea Systems**

Institute/Centre: **College of Eng. & Tech.** **Department:** **Mechanical & Marine**

Type: ❑ Program ❑ Course ❑ Workshop

Course Duration: ❑ 5 days ❑ 3 days ❑ 1 days ❑ Other: ----------

Course Conducted: ❑ Local ❑ International
Indicate: ----------

Course Venue: **College of Engineering and Technology**

Course Language: ❑ English ❑ Arabic ❑ Both ❑ Other: ----------

Course Description

Course Outlines:

- Types of pipelines.
- Prelaying route survey
- Design of pipelines.
- Installation and laying of pipelines.
- Inspection and survey techniques
- Maintenance and repair operations.

Course Objectives:

- The student should be able to Design and evaluate offshore pipeline with consideration to the production technology, environmental conditions, route characteristics, safety requirements and economical aspects.

Learning outcomes:

- Work as an offshore pipelines designer or laying specialist

Course includes: ❑ Theoretical ❑ Tutorial ❑ Laboratory ❑ Workshop ❑ Site Visit

Course Prerequisites:
Theoretical background or practical experience in offshore engineering.

Who should attend:

- Offshore design engineers
- Offshore construction and maintenance engineers
- Technical managers

Course References:

- Subsea and Pipeline Engineering – Bentham Press
- Rules for Submarine Pipeline Systems – Det Norske Veritas Offshore
- Technology Conference Proceedings.

Training Course Information form

No. of Participants/course: ❑5-10 ❑10-15 ❑15-20 ❑Other: ----------

Qualifications of Participants:

- B.Sc. , Marine Engineering, Mechanical Engineering, Civil Engineering.

No. of Lecturer: ❑1 ❑2 ❑3

No. of Assistance: ❑1 ❑2 ❑3

Course Facilities

☑ White Board ☑ V. Projector ☑Data show ☑ PC ☑ Manual ❑ Handouts
❑ Books ❑ Handouts ❑Flip charts ☑ S/W ❑Other: ----------

Course Evaluation

❑ Written Examination ☑ Written Report(s) ☑ Oral Presentation ❑Attendance
❑ Delegates Participation

Certificate Issue: ❑ Local Premises ❑AASTMT ❑ International

Course Registration

Registration: ■AAST Admission Registration ❑ Online ❑ Other: ----------

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Arab Academy for Science, Technology and Maritime Transport

Training Course Information Form

Course Information

Course Name: **Structural Design of Offshore Platforms**

Institute/Centre: **College of Eng. & Tech.** **Department:** **Mechanical & Marine**

Type: ❑ Program ☑ Course ❑ Workshop

Course Duration: ☑ 5 days ❑ 3 days ❑ 1 days ❑ Other: ----------

Course Conducted: ❑ Local ☑ International
Indicate: ----------

Course Venue: **College of Engineering and Technology**

Course Language: ❑ English ❑ Arabic ❑ Both ❑ Other: ----------

Course Description

Course Outlines:

- Types of Offshore Structures
- General design procedure, design loads and forces.
- Jacket structural design.
- Tubular joint design, fatigue analysis.
- Design codes.
- Topside structures, layout and design considerations.
- Pile foundations.

Course Objectives:

- The student should be able to perform detailed design calculations for offshore jacket platforms

Learning outcomes:

- Work as an offshore structural designer

Course includes: ☑ Theoretical ☑ Tutorial ❑ Laboratory ❑ Workshop ❑ Site Visit

Course Prerequisites:

Theoretical background or practical experience in offshore engineering.

Who should attend:

- Offshore design engineers
- Offshore construction and maintenance engineers
- Technical managers

Training Course Information form

Course References:

- W.J. Graff" Introduction to Offshore Structures".
- Barltrop & Adams "Dynamics of Fixed Marine Structure"
- Offshore Technology Conference - Proceedings.

No. of Participants/course: ❑5-10 ❑10-15 ❑15-20 ❑Other: ----------

Qualifications of Participants:

- B.Sc. , Marine Engineering, Mechanical Engineering, Civil Engineering.

No. of Lecturer: ❑1 ❑2 ❑3

No. of Assistance: ❑1 ❑2 ❑3

Course Facilities

❑ White Board ❑ V. Projector ❑Data show ❑ PC ❑ Manual ❑ Handouts
❑ Books ❑ Handouts ❑Flip charts ❑ S/W ❑Other: ----------

Course Evaluation

❑ Written Examination ❑ Written Report(s) ❑ Oral Presentation ❑Attendance
❑ Delegates Participation

Certificate Issue: ❑ Local Premises ❑AASTMT ❑ International

Course Registration

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Arab Academy for Science, Technology and Maritime Transport

Training Course Information Form

Course Information

Course Name: **Health & safety Management System**

Institute/Centre: **College of Eng. & Tech.** **Department:** **Mechanical & Marine**

Type: ❑ Program ❑ Course ❑ Workshop

Course Duration: ❑ 5 days ❑ 3 days ❑ 1 days ❑ Other: ----------

Course Conducted: ❑ Local ❑ International
Indicate: ----------

Course Venue: **College of Engineering and Technology**

Course Language: ❑ English ❑ Arabic ❑ Both ❑ Other: ----------

Course Description

Course Outlines:

- Introduction to safety management system
- Risk management: identification of hazards, risk assessment and documentation
- OHSMS 18001/18002
- Relation ISO 18001 to 14000 and 9000
- Auditing processes and skills including

Course Objectives:

- The course will offered an understanding of OHSMS 18001, risk assessment, nature of management systems, roles and responsibilities for effective management and auditing processes and skill.

Learning outcomes:

- Work as an management engineer

Course includes: ❑ Theoretical ❑ Tutorial ❑ Laboratory ❑ Workshop ❑ Site Visit

Course Prerequisites:
Non

Who should attend:

- Technical managers
- Site engineers

Course References:

- An Introduction to Project Management

No. of Participants/course: ❑5-10 ❑10-15 ❑15-20 ❑Other: ----------

Qualifications of Participants:

- B.Sc. , Marine Engineering, Mechanical Engineering, Civil Engineering.

No. of Lecturer: ❑1 ❑2 ❑3

No. of Assistance: ❑1 ❑2 ❑3

Course Facilities

☑ White Board ☑ V. Projector ☑Data show ☑ PC ☑ Manual ❑ Handouts
❑ Books ❑ Handouts ❑Flip charts ☑ S/W ❑Other: ----------

Course Evaluation

❑ Written Examination ☑ Written Report(s) ☑ Oral Presentation ❑Attendance
❑ Delegates Participation

Certificate Issue: ❑ Local Premises ❑AASTMT ❑ International

Course Registration

Registration: ■AAST Admission Registration ❑ Online ❑ Other: ----------

Sponsor: ❑ Individual ❑ Funded By: 8000 L.E Egyptian Company

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Documents required: ❑ Registration form ■ ID/Passport copy ❑ Photo

Arab Academy for Science, Technology and Maritime Transport

Training Course Information Form

Course Information

Course Name: **Welding and quality engineer**

Institute/Centre: **College of Eng. & Tech.** **Department:** **Mechanical & Marine**

Type: ❑ Program ❑ Course ❑ Workshop

Course Duration: ❑ 5 days ❑ 3 days ❑ 1 days ❑ Other: ----------

Course Conducted: ☑ Local ❑ International
Indicate: ----------

Course Venue: **College of Engineering and Technology**

Course Language: ❑ English ❑ Arabic ❑ Both ❑ Other: ----------

Course Description

Course Outlines:

- Introduction to material defects
- Applying quality and standers on fabrications for different structures
- Prepare and examine welders for different projects
- Introduction to different welding techniques and safety requirements
- Different inspection techniques for different welding defects

Course Objectives:

- The course will offered an understanding of different inspection techniques of material and welding defects for different projects.

Learning outcomes:

- Understanding the problems of material fabrication process

Course includes: ☑ Theoretical ❑ Tutorial ☑ Laboratory ❑ Workshop ❑ Site Visit

Course Prerequisites:
Non

Who should attend:

- Technical managers
- Site engineers and technicians
- Quality engineer
- Fresh graduate engineers

Course References:

- An Introduction to welding process

No. of Participants/course: ❑5-10 ❑10-15 ❑15-20 ❑Other: ----------

Qualifications of Participants:

- B.Sc. , Marine Engineering, Mechanical Engineering.

No. of Lecturer: ❑1 ❑2 ❑3

No. of Assistance: ❑1 ❑2 ❑3

Course Facilities

☑ White Board ☑ V. Projector ☑Data show ☑ PC ☑ Manual ❑ Handouts
❑ Books ❑ Handouts ❑Flip charts ☑ S/W ❑Other: ----------

Course Evaluation

❑ Written Examination ☑ Written Report(s) ☑ Oral Presentation ❑Attendance
❑ Delegates Participation

Certificate Issue: ❑ Local Premises ❑AASTMT ❑ International

Course Registration

Registration: ■AAST Admission Registration ❑ Online ❑ Other: ----------

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