



Construction Engineering COEN-SA-03

COEN-SA-03-01	COST CONTROL OF ENGINEERING PROJECTS
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COEN-SA-03-08	REPAIR AND MAINTENANCE OF STEEL STRUCTURES
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COEN-SA-03-10	ADMINISTRATION OF CONSTRUCTION PROJECTS



COEN-SA-03-01 COST CONTROL OF ENGINEERING PROJECTS

The main objective of this course is to familiarize engineers with the costing principles and techniques and how to detect the cost variances and investigate their causes.

Course Outline

- The concept of cost
- Principles of costing
- Cost estimation
- Cost scheduling
- Principles of cost control
- Investigating causes of cost variance
- Case studies

COEN-SA-03-02 ENGINEERING PROJECTS PLANNING AND CONTROL

The main objective of this course is to familiarize the engineers who are involved in project planning and management with project planning and control techniques to ensure the attainment of the project's scope at the desired level of quality, within the given budget and to meet target dates.

Course Outline

- Time and cost tradeoffs
- Performance evaluation and reporting system
- Computer applications & case studies.
- Importance of project planning and control
- Network techniques
- CPM and PERT calculations
- Precedence diagramming calculations
- Resource loading and resource leveling



COEN-SA-03-03 COST RATIONALIZATION

Costs eat profit, but cost reduction is also a scope reduction. This course presents means and solutions that enable management to realize cost savings without negatively affecting the size of operation nor the scope of activities.

Course Outline

- **Costs cutting, reduction, and rationalizing**
- **Production costs**
- **Administrative costs**
- **Distribution costs**
- **Financial costs**
- **Activity based costing approach**
- **Rationalizing in action**
- **Case studies**

COEN-SA-03-04 BIDS AND CONTRACTS FOR ENGINEERING PROJECTS

The objective of this course is to offer comprehensive and practical guidance on key issues of tendering and contracting procedures. Technical, financial and legal aspects involved in bidding and contracting processes are discussed in the light of the governing Egyptian Laws (Civil Code, Law No. 9, ...) as well as under the international conditions of FIDIC, AID, IBRD, IDA, OECF, KFW, ...).

Course Outline

- **Engineering project life cycle**
- **Pre-qualification and tendering procedures**
- **Tendering evaluation and awarding the contract and types of Contracts**
- **Important contract terms and clauses concerning**
- **Commencement and completion**
- **Adverse physical conditions and artificial obstructions**
- **Delays and extension to time, variations and its valuation**
- **Liquidated damages and penalty clauses, Disputes and claims**
- **Settlement of disputes**
- **Case studies**



COEN-SA-03-05 TENDERING PROCEDURES AND TENDERING STRATEGIES

This course discusses the different phases of tendering and the relevant regulations followed by the ILAS (International Lending Agencies), e.g. the World Bank and other regional development banks, in this respect. A comparison with the local procedures prescribed by the Egyptian Law No. 9 is also discussed.

COEN-SA-03-06 FIDIC FORMS OF CONTRACT CONDITIONS

This course discusses all FIDIC forms of contract conditions; the main features of each as well as the obligations and the rights of the contract parties. Employers, engineers and contractors should all find this course useful making best use of these forms of contract which have become very common in the Egyptian construction market.

Course Outline

- **What is FIDIC**
- **The FIDIC civil engineering conditions**
- **The FIDIC electrical & mechanical works including erection on site**
- **The FIDIC client/consultant model service agreement, formerly known as IGRA**
- **The FIDIC sub-constancy agreement**
- **The FIDIC joint venture (Consortium) agreement**
- **The FIDIC conditions of sub-contract for civil engineering constructions.**
- **The FIDIC conditions for design-build & turnkey**
- **Case studies**



COEN-SA-03-07 DESIGN OF STEEL STRUCTURES ACCORDING TO NEW EGYPTIAN CODE FOR STEEL CONSTRUCTION 2001

The new Egyptian code for steel construction and bridges, 2001 is completely different than the previous edition 1998. All design aspects have been remarkably updated to achieve more economical designs, and to suit the recent development in all international standards. This course designed to simplify all the new requirements of the Egyptian cod 2001 to graduated and professional structural Engineers.

Course Outline

- Weldability of steel materials, welding processes, design of fillet and butt welds. Geometric limitations of steel members to avoid local buckling effects.
- Effect of prying forces in design of high strength friction grip bolted connections.
- Step by step procedures for design of different connection types.
- Upgraded design of composite (steel / concrete) columns and beams.
- New design algorithm for design of cold formed sections
- Upgrading of detailing capabilities through applications from executed projects.
- Case studies
- Computation of seismic and wind loads according to the new Egyptian code for loads and forces.
- New formulas for allowable design stresses of compact, non-compact and slender steel sections.
- Geometric limitations of steel members to avoid local buckling effects.



COEN-SA-03-08 REPAIR AND MAINTENANCE OF STEEL STRUCTURES

This course is intended for civil and arch. Engineers that are interested in the repair and maintenance of deteriorated steel elements. The material and procedure used for repair and maintenance will be discussed in addition to methods of protection to prevent further damage.

Course Outline

- **Inspection and evaluation**
- **Methods of repair**
- **Protection of steel elements**
- **Properties of materials**
- **Case studies**
- **Corrosion of steel**
- **Non-Destructive testing**
- **X-ray inspection**
- **Code provisions**

COEN-SA-03-09 SUCCESSFUL PROJECT MANAGER SKILLS

The course discusses the project manager's roles and responsibilities to both the organization and the Project team. It develop and enhances the valuable skills needed such as technical and administrative credibility, political sensitivity and in ability to get others to commit to the project .In addition to the leadership skills to handle the variety of project demands effectively.

Course Outline

- **Criteria for project manager**
- **Project Manger rules and responsibilities**
- **Selection of project manager required skills**
- **Project manager and organization structure**
- **Project manager and time control**
- **Project manager and Cost Control**
- **Project manager and Quality Control**
- **Project manager and Resources Allocation**
- **Solving common problems for project manager**



The principal objective of this course is to provide those who are, or like to be, active in the construction industry with effective definitions in the wheel and deal of construction. It will help address the responsibilities and risks that are likely to be encountered by each party in the construction scheme. The course introduces design professionals, project managers, students and owners to the unique problems of construction. It also serves as a ready reference to experienced contract administrators and construction engineers as well.

Course Outline

- The project delivery system
- Construction operations
- Responsibility and authority
- Documentation: records and reports
- Specifications and reports
- Construction safety
- Risk allocation and liability sharing
- Planning for construction
- Value engineering
- Construction materials and workmanship
- Change and extra work
- Claims and disputes
- Case studies.