







OFFICE OF CONSULTATION & TRAINING
College of Engineering and Petroleum

Kuwait University- College of Engineering & Petroleum – Civil Engineering Department – OCT



CE011- Smart Sustainable Green Buildings: Technology Fundamentals & Applications (LEED)

Contact

-  98765392
-  24983523
-  24983524
-  tpd.occd@eng.ku.edu.kw

Training course duration:

Five Days

Timing:

8 a.m. - 2 p.m. Daily

Course objectives

This course provides a practical understanding of smart & green buildings and design, environmental awareness and skills for more sustainable design and construction. Smart buildings deliver essential automated building services such as lighting, cooling and heating, and air quality, at the lowest cost and environmental impact over the building lifecycle. In order for smart buildings to run at maximum efficiency, the buildings must be maintained by skilled, technology-facilities managers and technicians, trained on digital automated maintenance systems.

The course provides an understanding of achieving the LEED (Leadership in Energy and Environmental Design), the world's most widely used green building rating system. LEED certification provides a framework for healthy, highly efficient, and cost-saving green buildings, which offer environmental, social and governance benefits. LEED certification is a globally recognized symbol of sustainability achievement, and it is backed by an entire industry of committed organizations and individuals paving the way for market transformation.

Course outline :

Day one topics:

- Introduction
- What is smart green building?
 - How do smart buildings make a building green?
 - What is the difference between green building and other building?
 - What is considered a smart building?
 - What is the difference between a smart building and a conventional building?
 - What is a green building?
 - What makes a green building?
 - Why is it called green building?



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- What is the difference between green building and eco friendly building?
- Why LEED Certification?
- What are the benefits of LEED Certification?

Day two topics:

Energy & Atmosphere

- Reduce energy demand
- Energy efficiency
- Use renewable energy
- Ongoing performance
- Passive solar design and natural ventilation
- Lighting
- User-adapted, smart building performance management
- High-performance energy HVAC installation and control
- Analysis tool of energy flows – optimized energy use in building
- Physics of heat transfer in buildings
- Physics of moisture transfer in buildings
- Energy calculations for houses
- Thermal comfort, air quality, and humid air
- Design of plumbing installations
- Ventilation
- Comfort cooling
- Fire protection
- Practical consideration of low energy buildings
- Energy declaration toward smart control
- Smart HVAC installation and control
- Existing green smart sustainable buildings in GCC countries

Day three topics:

Sustainable Buildings

- Definition of sustainability
- Global and local context of sustainable development
- Principles of sustainable building
- Environmental design
- Marketing sustainable housing to clients
- Site assessment & management



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- Sustainable design
- Heat island effect
- The cost-benefit analysis
- Sustainable smart low energy buildings
- Case studies

Water Efficiency

- Outdoor & indoor strategies
- Process water strategies
- Design and operational issues for water and energy efficiency
- Selection of water and energy-efficient ecologically friendly appliances
- Rainwater management
- Water reduction measurements
- Different water types available locally & their best utilization
- Case Studies

Day Four topics:

Materials & Resources

- Conservation of materials and waste management
- Environmentally preferable materials
- Sustainable purchasing
- Waste management
- Case studies

Indoor Environmental Quality

- Improve indoor air quality
- Source control
- Improve ventilation
- Increase occupant comfort
- Daylighting
- Views
- Occupant control
- Acoustics
- Case studies

Location & Transportation

- Transportation



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CE011- Smart Sustainable Green Buildings: Technology Fundamentals & Applications (LEED)

- Telecommuting
- Reward carpooling/modifying parking fees
- Locate near mass transit/provide access
- Bicycle networks
- Alternative fuel vehicles
- Car share programs
- Minimize parking
- Case studies

Day Five topics:

Synergies & Conflicts

- Synergy within location and transportation
- Synergy within sustainable sites
- Synergy within water efficiency
- Synergy within energy and atmosphere
- Synergy within materials and resources
- Synergy within indoor environmental quality
- Innovative design & Performance
- LEED certification
- Prioritize & summary
- Existing green smart sustainable buildings around the World
- Most suited technology with greatest impact for GCC countries
- Conclusions & final recommendations

Fees:

250 KD

Instructor:

Prof. Nabil Qurtom
Civil Engineering
College of Engineering & petroleum
Kuwait University







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CE012- The Pre-Design Stage : Preparation and review of Feasibility Studies & TOR, and Consultants Proposals Evaluation

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Course objectives

This course introduces the participants to how feasibility studies are conceived, conducted, and appraised. A typical feasibility study starts with the marketing study, then a technical study to determine, among other things, facility location, appropriate technology, capacity, and availability of qualified workforce, then, a financial study, and finally, a legal, organizational, and environmental and national impact studies are conducted. Most importantly, providing potential alternatives along with the pros and cons of each. The challenges facing the success of the project must be studied and controlled before the go ahead of any future project.

This course then provides the participants with the knowledge and skills required to prepare and review a well-specified Terms of Reference (ToR) for a given project. A Terms of Reference (ToR) document provides an important overview of what is expected in a given future project as per the owner and/or end user requirements. This course explains the evaluation process of the technical and financial consultants proposals. The course demonstrates the steps and criteria for evaluation of the consultants proposals and the process of selecting the winner to perform design and/or supervision and/or construction management services for a given project.

Training course duration:

Five Days

Timing:

8 a.m. - 2 p.m. Daily

Course outline :

Day one topics:

1. Feasibility Studies:
 - } Identification and exploration of the fundamentals & applications of feasibility studies
 - An introduction to feasibility study – pre identification Lesson
 - Identification and exploration of business scenarios Module
 - } Marketing study – identification Lesson



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CE012- The Pre-Design Stage : Preparation and review of Feasibility Studies & TOR, and Consultants Proposals Evaluation

- Market research Lesson
- Demand forecasting Lesson
- } Technical feasibility Lesson
- Planning phase Lesson
- Design, Construction & operational phase Module
- Case Studies

Day two topics:

- } Financial / economic feasibility Lesson
- Estimate total capital requirements- total investment costs Lesson
- Financial and economics statements Lesson
- } Feasibility Study report
- The legal and Organizational Study Lesson
- Feasibility Study Decisions
- Case Studies

Day three topics:

- 2. Terms of Reference (ToR)
- } Why and for whom the TOR is being done
- Background knowledge, objectives, strategy and progress to date
- Primary intended users and uses
- Key evaluation questions.
- } How it will be accomplished
- Overall scope and approach
- Project Location, characteristics, components & stages
- Time schedule & payment methods
- Required financial bonds & insurance
- Evaluation methodology/evaluation plan
- } Who will undertake the evaluation and accountabilities
- Professional qualifications, experience and expertise required for the evaluation team.
- Evaluation criteria
- } Final review & distribution to potential consultants



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CE012- The Pre-Design Stage : Preparation and review of Feasibility Studies & TOR, and Consultants Proposals Evaluation

Day Four topics:

3. Evaluation of Consultants Technical Proposals

- Setting the criteria for evaluating the technical proposals
- Evaluating the Consultants performance on similar projects
- Evaluating the Consultants staff CVs
- Evaluating the Consultant Time schedule
- Evaluating creative conceptual ideas meeting or exceeding the expectation of the ToR
- Case Studies

Day Five topics:

- How the technical score is compared to the financial score
- Selecting with the winner based on the criteria set by the CAPT new law
- Financial bonds & insurance
- Payments & penalties
- How the technical score is compared to the financial score
- Case Studies
- Conclusions & lessons learned

Fees:

250 KD

Instructor:

Prof. Nabil Qurtom
Civil Engineering
College of Engineering & petroleum
Kuwait University







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CE013- Engineering Contracts & Local Laws



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Training course duration:

Five Days

Timing:

8 a.m. - 2 p.m. Daily

Course objectives

To learn the philosophy, evolution, and fundamentals of the different types of contracts and have an opportunity to see how each of these actually works. Course focuses on the real life of the contract Policy, Process, Initiating, Planning, Tendering, Bid Evaluation, negotiation, Execution, Monitoring and closing. Critical topics include: contract scope, tendering documents, pre-tender meeting, contract documents, execution monitoring, performance warranties, bank bonds, insurance, project supervision & control, substantial & final completion certificates.

Course outline :

Day one topics:

- Slandered contracts pros and cons
- What is contract risks
- Project-delivery methods:
 - ♣ Design – Bid – Build (Traditional Project Delivery)
 - ♣ Construction Management
 - ♣ Design-Build
- Contract Types:
 - o Fixed Price (lump sum or Re-measured)
 - o Cost+ (% Cost, Fixed fee, Incentives, GMP)
- Contract Administration Risks
- Case studies



CE013- Engineering Contracts & Local Laws

Day two topics:

- o Distinguish between different types of contracts
- o Identify and manage Stakeholders Needs
- o Demonstrate understanding on Contractual and Legal clauses for different types of contracts
- o Roles, Duties & Responsibilities of Main Parties under the FIDIC contracts
 - Owner/End user
 - Designer/Supervision
 - Contractor
 - CM/PM
- o Professional, legal, contractual, ethical and social aspects
- o Case Studies

Day three topics:

- o Bidding & Contract documents and their Priorities, which comes first !!
- o Engineering Documents (Drawings, Specifications, BOQ)
- o Legal Documents (General and Special Conditions)
- o Financial Documents (Bid Bond, Performance Bond, Retainage, Advanced Payment, Insurance)
- o Pre-Tender Meeting and Addenda
- o How to resolve conflicts and ambiguities between tender documents?
- o Rules of interpreting contracts
- o Implied vs. Explicit language of contracts
- o How to reduce or eliminate ambiguity
- o Case Studies

Day Four topics:

- Variation Orders – Causes
- Constructive Changes
- Impact of Variation Orders on time, cost & quality
- Management & Control of VOs
- VOs Forms
- Stakeholders involvement in variation orders
- Delay & Liquidated Damages



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CE013- Engineering Contracts & Local Laws

- Suspension
- Civil law
- Case studies

Day Five topics:

- Claims & Disputes
- Legal risks (Local & International laws)
- Claim preparation & documentation
- Claim analysis
- Claims Techniques
- Claims for unforeseen conditions
- Claim negotiation & settlement
- Counter claims
- Dispute Board & Amicable settlement
- Contract Termination or Withdrawal (the steps & the consequences)
- Conclusions & Lessons Learned

Fees:

250 KD

Instructor:

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CE014- Variation Orders and Claims Negotiation, Arbitration & Litigation

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Course objectives

Provide an understanding to managing the different types of variation orders and its impact on time, cost and quality. Explain the different types of claims, the process of claim preparation, analysis, negotiation and settlement. The management strategy to avoid and/or minimize claims and prepare counter claims. Present claims and dispute resolution methods including negotiation, mediation, arbitration and litigation The process of contract, claims and arbitration management, and the most effective methods to control and resolve construction contract disputes and claims, thus avoiding lengthy and expensive litigation.

Training course duration:

five Days

Timing:

8 a.m. - 2 p.m. Daily

Course outline :

Day one topics:

- Contract Types & Documents
- Variation Orders – Causes
- Impact of Variation Orders on time, cost & quality
- Management & Control of VOs
- VOs Forms
- Stakeholders involvement in VOs
- Case studies

Day two topics:

- What is a claim?
- What are the common causes of claims?



CE014- Variation Orders and Claims Negotiation, Arbitration & Litigation

- Types of claims by the contractor and owner
- Claims for variations and changes
- Case studies

Day three topics:

- Claim preparation & documentation
- Claim analysis
- Claims Techniques
- Claims for unforeseen conditions
- Claim negotiation & settlement
- Counter claims
- Civil law
- Case studies

Day Four topics:

- Establishing the project schedule
- Delay analysis with CPM
- Compensable delays
- Contractor-caused delays (non-compensable)
- Concurrent delays
- Use of CPM in litigation
- Contractor's entitlement to extension of time, acceleration, disruption & suspension.
- Case studies

Day Five topics:

- Negotiation, Mediation, Arbitration and Litigation
- Advantages and disadvantages of arbitration
- Arbitration steps in Kuwait
- Arbitration practice and experience
- Panel discussion of claim experts
- Conclusions and final remarks



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CE014- Variation Orders and Claims
Negotiation, Arbitration & Litigation

Fees:

250 KD

Instructor:

Prof. Nabil Qurtom
Civil Engineering
College of Engineering & petroleum
Kuwait University







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CE015- The New Tendering Law (CAPT) - Applications & Executive Regulations

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Course objectives

To familiarize the participants with the New Tenders Law. No 49 of 2016 which superseded Law No. 37 of 1964. This New Tenders Law is one of the most important legislations that govern billions of dinars in state projects every year. The New Law includes many major changes that require full understanding from all parties involved in projects.

Training course duration:

five Days

Timing:

8 a.m. - 2 p.m. Daily

Course outline :

Day one topics:

- } Definitions and scope of application of the law
- } Institutional regulation of public procurement agencies
- } Examples

Day two topics:

- } Procurement Procedures and Contracting Methods
- } General provisions on procurement procedures
- } Contracting Methods
- } Case Study



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CE015- The New Tendering Law (CAPT) - Applications & Executive Regulations

Day three topics:

- } Selection of the contractor and the qualification of the tenderers
- } Offering the tender and submitting the bids
- } Q & A

Day Four topics:

- } The procedures of decision on the tender and signing the contract
- } Variation Orders
- } Lessons Learned
- } Case studies

Day Five topics:

- } Considering complaints and grievances
- } Preventing conflicts of interest, accountability and sanctions
- } Model contract and purchase contract
- } Final Provisions
- } Conclusions & Recommendations

Fees:

250 KD

Instructor:

Prof. Nabil Qurtom
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Department – OCT
CE016- PMP



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Course objectives

This is an intensive course that will provide the participants with the most innovative way to prepare for the PMP certification. It presents a comprehensive overview of the five main process groups encompassing the forty-nine processes associated with effective and efficient project management practice including all knowledge areas of scope, time, cost, quality, human resources, communications, risk, procurement, stakeholders and most importantly integration. Numerous examples and applications will be provided to participants, along with daily question-answer (Q-A) sessions

Training course duration:

five Days

Timing:

8 a.m. - 2 p.m. Daily

Course outline :

Day one topics:

- PMP basics
- Preparing & registering for the exam
- Introduction to PMBOK 6th & 7th edition
- PM Framework
- PM Process Groups (initiation, planning, execution, controlling and closing)
- Q-A session

Day two topics:

- Integration Management (develop project charter, develop project management plan, direct and manage execution, monitor and control project work, perform integrated change control, close project or phase)



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CE016- PMP



- Scope Management (collect requirements, define scope, create WBS, verify scope, control scope)
- Time Management (planning, scheduling and control)
- Q-A session

Day three topics:

- Cost Management (cost estimating, budgeting and control)
- Quality Management (quality planning, assurance and control)
- Q-A session

Day Four topics:

- Communication Management (identify stakeholders, plan communication, distribute information, manage stakeholders, report performance)
- Human Resource Management (develop human resource plan, acquire, develop and manage project team)
- Risk Management (plan risks, identify risks, perform qualitative & quantitative risk analysis, plan risk responses, control risks)
- Q & A

Day Five topics:

- Procurement Management (plan, conduct, administer and close procurement)
- Stakeholders Management
- Q & A
- Practice Exam
- Final conclusions and remarks

Fees:

250 KD

Instructor:

Prof. Nabil Qurtom
Civil Engineering
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Kuwait University- College of Engineering & Petroleum – Mechanical Engineering – OCT



ME013- Failure Analysis

Contact

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Course objectives

- 1) Establish a sense of practical engineering practice through examination of case studies related to equipment analysis and system design failures and accidents caused by errors and omissions of engineering process.
- 2) Introduce a systematic failure analysis methodology from the initial on-site investigation to final report and possible testimony as an expert witness.
- 3) Introduce the modern tools and analysis methods used recently in the failure analysis process.

Training course duration:

five Days

Timing:

8 a.m. - 2 p.m. Daily

Course outline :

Day one topics:

Introduction to failure analysis

Day two topics:

Tools for preliminary and microscopic analysis of a mechanical failure

Day three topics:

Mechanisms of damage and failure

Day four topics:

Modeling tools applied to the analysis of mechanical failure



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ME013- Failure Analysis



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Day five topics:

Root cause analysis and consequences of failure analysis

Fees:

250 KD

Instructor:

Dr. Mohammad Alabdullah
mechanical Engineering
College of Engineering & petroleum
Kuwait University







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ME014- Computer Aided Design and Analysis

Contact

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Training course duration:

five Days

Timing:

8 a.m. - 2 p.m. Daily

Course objectives

- 1) Establish competence in the use of computation tools for practical problem solving and analysis.
- 2) Introduce a practical framework for numerical methods used in computer aided design and analysis.

Course outline :

Day one topics:

Introduction to CAD and FEM

Day two topics:

CAD modeling

Day three topics:

Finite element analysis



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ME014- Computer Aided Design and Analysis

Day four topics:

Optimization techniques

Day five topics:

Applications in analysis and simulation of fluid, thermal and
structural systems

Fees:

250 KD

Instructor:

Dr. Mohammad Alabdullah
mechanical Engineering
College of Engineering & petroleum
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ME015- Heat Exchanger Analysis

Contact

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Course objectives

- 1) Establish a sense of practical engineering practice through examination of case studies related to equipment analysis and system design failures and accidents caused by errors and omissions of engineering process.
- 2) Introduce a systematic failure analysis methodology from the initial on-site investigation to final report and possible testimony as an expert witness.
- 3) Introduce the modern tools and analysis methods used recently in the failure analysis process..

Training course duration:

Seven Days

Timing:

8 a.m. - 2 p.m. Daily

Course outline :

Day one topics:

Introduction to heat exchangers classification

Day two topics:

Modes of heat transfer

Day three topics:

Finite element analysis *Compact heat exchangers*

Day four topics:

Shell and tube heat exchangers



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ME015- Heat Exchanger Analysis

Day five topics:

Plate type heat exchangers

Day six topics:

Condenser and evaporators and other types of heat exchangers

Day seven topics:

Application of a heat exchanger analysis case study

Fees:

250 KD

Instructor:

Dr. Mohammad Alabdullah
mechanical Engineering
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