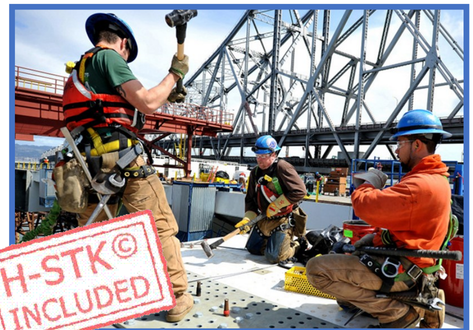
COURSE OVERVIEW SE0080

Onshore Foundation Construction Design



Course Title
Onshore Foundation Construction Design

Course Date/Venue
Session 1: June 22-26, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: November 17-21, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
SE0080

Course Duration/Credits
Five days/3.0 CEUs/30.0 PDHs

3.0 CEUs (30 PDHs) AWARD

Course Description

This practical and highly-interactive course includes practical sessions where participants will visit steel structures. Practical sessions will be performed in order to apply the theory learnt in the class.

This course is designed to provide delegates with a detailed and up-to-date overview of steel structure design, construction, inspection, maintenance & durability. It covers the proper use of techniques and procedures on design, inspection, maintenance and durability of steel structures; the properties of steel and the tension members; the various types of structural fasteners and emphasize the common welding processes used in steel structures; the scope of the compression members and explain the features and functions of laterally supported beams.

The course will also cover the torsion, lateral-torsional buckling of beams, continuous beams and plate girders and employ their practical application in steel structures; the types of connections used in steel structures and differentiate braced and unbraced frames; the methodological practical applications on structural steel and bolting inspection. Moreover, it will assist the delegates to execute the maintenance procedures of steel structures and emphasize the sustainability of steel-framed buildings and the different approaches used in maintaining the durability of steel structures.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply proper techniques and procedures on the design, construction, inspection, maintenance and durability of steel structures
- Identify the properties of steel and the tension members
- Enumerate the various types of structural fasteners and emphasize the common welding processes used in steel structures
- Recognize the scope of the compression members and explain the features and functions of laterally supported beams
- Discuss torsion, lateral-torsional buckling of beams, continuous beams and plate girders and employ their practical application in steel structures
- Determine the types of connections used in steel structures and differentiate braced and unbraced frames
- Implement the methodological practical applications on structural steel and bolting inspection
- Carryout the maintenance procedures of steel structures and emphasize the sustainability of steel-framed buildings
- Employ the different approaches used in maintaining the durability of steel structures

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course covers systematic techniques and methodologies on steel structure design, construction, inspection, maintenance and durability for civil engineers, mechanical engineers, structural engineers, architects, contractors, managers, maintenance managers and inspection engineers.

Course Fee

US$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)
Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations
Certificates are accredited by the following international accreditation organizations:-

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Luis Manuel is a **Senior Structural Engineer** with over **25 years** of extensive experience in the **Oil & Gas Industry**. He is an **Expert** in the areas of **Structural Analysis & Design**, **Dynamic Analysis Reinforced Concrete Structure**, **Engineering Drawings**, **Standards & Codes**, **Naval Architecture**, **Stress Analysis**, **Underwater Inspection & Maintenance**, **Assessment Engineering**, **Regulatory Compliance Inspections**, and **Finite Element Analysis**.

Presently, Mr. Manuel is the **Technical Advisor** and **Senior Structural Engineer** of a leading **engineering consultancy company**, where he leads in all **Structural Engineering** related operations, **coordinates structural activities** for **platform modifications**, mobilizes the **preparation of detailed drawings**, the **construction work scope**, the **development of structural material take-off reports**, **analyses reports**, **structural details** and **welding details**, **carry out advanced assessment analyses** of **existing structures** and **special fatigue investigations**. He had also been heavily involved in the **development of instruction materials** as authorized by **EDI** (**Engineering Dynamic Incorporated**) and the training of engineers on the **SACS** software (**Structural Analysis Computer System**). He had gained his expertise & thorough practical experience through his stint with numerous **international organizations** including **Chevron**, **ExxonMobil**, **W.S.Atkins**, **MSL**, **Atlas Engineering**, **Heerema**, the **US Navy**, **Ingalls**, **Textron** and **Barnett & Casbarian.**

During his long career life, Mr. Manuel has accomplished many challenging assignments such as **performing linear elastic SACS® analyses for the strength, seismic and fatigue assessment** of various platforms; the **supervision of the data recording for underwater inspection by ROV**; generating **topside structural inspections** of **existing platforms** to **document structural deficiencies** and **corrosion impingement**; designed and produced **fabrication drawings** for **updating and rehabilitating an existing platform**; **performed analysis** and **developed construction drawings**; provided the **design** and **installation/rigging drawings** for the **transportation of modules**; **supplying reinforcement analysis** for **helidecks slated** for **relocation** and their corresponding reuse offshore; managing the **design** of **transportation cradle** and **lifting sling** for the **installation** of **jacket structures**; producing designs on various **green field structures** such as **tripods** and **4-leg platforms**; creating the **deck analysis** and **design** of an **overhead crane rail system**; preparing the **fabrication drawings** for the **strengthening** and the **modification** of an **international barge** and drafting out the **structural repairs** of a **cruise ship**.

Mr. Manuel has a **Bachelor** degree in **Mechanical Engineering** from the **State University of New York**. Further, he is a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), a **Certified Instructor/Trainer** and the **author** of the book "**Offshore Platforms Design**" and the "**SACS Software Training Module**".

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Program

The following program is planned for this course. However, the course Instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Steel Structures*** *Structural Design • Principles of Design • Historical Background of Steel Structures • Loads • Types of Structural Steel Members • Steel Structures • Specifications and Building Codes • Philosophies of Design • Factors of Safety – ASD and LRFD Compared • Why Should LRFD be Used? • Analysis of the Structure*
0930 – 0945	*Break*
0945 – 1200	***Steels and Properties*** *Structural Steels • Fastener Steels • Weld Electrode and Filler Material • Stress-Strain Behavior (Tension Test) at Atmospheric Temperatures • Material Toughness • Yield Strength for Multiaxial States of Stress • High Temperature Behavior • Cold Work and Strain Hardening • Brittle Fracture • Lamellar Tearing • Fatigue Strength • Corrosion Resistance and Weathering Steels*
1200 – 1215	*Break*
1215 – 1330	***Tension Members*** *Nominal Strength • Net Area • Effect of Staggered Holes and Net Area • Effective Net Area • Tearing Failure at Bolt Holes • Stiffness as a Design Criterion • Load Transfer at Connections • Load and Resistance Factor Design – Tension members • Tension Rods • Allowable Stress Design-Tension Members*

1330 – 1420	***Structural Fasteners*** *Types of Fasteners • Historical Background of High-Strength Bolts • Causes of Rivet Obsolescence • Details of High-Strength Bolts • Installation Procedures • Nominal Strength of Individual Fasteners • Load and Resistance Factor Design – Fasteners • Examples – Tension Member Bearing-Type Connections – LRFD • Slip-Critical Joints • Allowable Stress Design – Fasteners • Examples – Tension Members Using Allowable Stress Design • Eccentric Shear • Fasteners acting in Axial Tension • Combined Shear and Tension • Shear and Tension from eccentric Loading*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Welding*** *Basic Processes • Weldability of Structural Steel • Types of Joints • Types of Welds • Welding Symbols • Factors Affecting the Quality of Welded Connections • Possible Defects in Welds • Inspection and Control • Economics of Welded Built-Up Members and Connections • Size and Length Limitations for Fillet Welds • Effective Areas of Welds • Nominal Strength of Welds • Load and Resistance Factor Design – Welds • Allowable Stress Design – Welds • Welds Connecting Members Subject to Direct Axial Load • Eccentric Shear Connections – Strength Analysis • Eccentric Shear Connections – Elastic (Vector) Analysis • Loads Applied Eccentric to the Plane of Welds*
0900 – 0915	*Break*
0915 – 1100	***Compression Members*** *Basic Column Strength • Inelastic Buckling • Residual Stress • Development of Column Strength Curves Including Residual Stress • Structural Stability Research Council (SSRC) Strength Curves • Load and Resistance Factor Design • Effective Length • Load and Resistance Factor Design of Rolled Shapes (W.S. and M) Subject to Axial Compression • Allowable Stress Design •Shear Effect • Design of Latticed Members • Strength of Plates under Uniform Edge Compression • AISC Width/Thickness Limits* λ_r *to Achieve Yield Stress Without Local Plate Buckling • AISC Width/Thickness Limits* λ_p *to Achieve Significant Plastic Deformation • AISC Provisions to Account for the Buckling and Post-Buckling Strengths of Plate Elements • Design of Compression Members as Affected by Local Buckling Provisions*
1100 – 1230	***Beams: Laterally Supported*** *Simple Bending of Symmetrical Shapes • Behavior of Laterally Stable Beams • Laterally Supported Beams – Load and Resistance Factor Design • Laterally Supported Beams – Allowable Stress Design • Serviceability of Beams • Shear on Rolled Beams • Concentrated Loads Applied to Rolled Beams • Holes in Beams • General Flexural Theory • Biaxial Bending of Symmetric Sections*
1230 – 1245	*Break*

1245 – 1420	***Torsion*** *Pure Torsion of Homogeneous Sections • Shear Stresses Due to Bending of Thin-Wall Open Cross-Sections • Shear Center • Torsional Stresses in I-Shaped Steel Sections • Analogy Between Torsion and Plane Bending • Practical Situations of Torsional Loading • Load and Resistance Factor Design for Torsion – Laterally Stable Beams • Allowable Stress Design for Torsion – Laterally Stable Beams • Torsion in Closed Thin-Wall Sections • Torsion in Sections with Open and Closed Parts • Torsional Buckling*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0900	***Lateral-Torsional Buckling of Beams*** *Rational Analogy to Pure Columns • Lateral Support • Strength of I-Shape Beams Under Uniform Moment • Elastic Lateral-Torsional Buckling • Inelastic Lateral-Torsional Buckling • Load and Resistance Factor Design – I Shaped Beams Subjected to Strong-Axis Bending • Allowable Stress Design – I-Shaped Beams Subjected to Strong-Axis Bending*
0900 – 0915	*Break*
0915 – 1100	***Lateral-Torsional Buckling of Beams (cont'd)*** *Effective Laterally Unbraced Length • Examples: Load and Resistance Factor Design • Examples: Allowable Stress Design • Weak-Axis Bending of I-Shaped Sections • Lateral Buckling of Channels, Zees, Monosymmetric I-Shaped Sections and Tees • Lateral Bracing Design • Biaxial Bending of Doubly Symmetric I-Shaped Sections*
1100 – 1230	***Continuous Beams*** *Plastic Strength of a Statically Indeterminate Beam • Plastic Analysis – Load and Resistance Factor Design Examples • Elastic Analysis – Load and Resistance Factor Design Examples • Elastic Analysis – Allowable Stress Design Examples • Splices*
1230 – 1245	*Break*
1245 – 1420	***Plate Girders*** *Difference Between Beam and Plate Girder • Vertical Flange Buckling Limit State • Nominal Moment Strength – load and Resistance Factor Design • Moment Strength – Allowable Stress Design • Moment Strength Reduction Due to Bend-Buckling of the Web • Nominal Moment Strength – Hybrid Girders • Nominal Shear Strength – Elastic and Inelastic Buckling • Nominal Shear Strength – Including Tension-Field Action • Strength in Combined Bending and Shear • Intermediate Transverse Stiffeners • Bearing Stiffener Design • Longitudinal Web Stiffeners • Proportioning the Section • Plate Girder Design* *Example – LRFD*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0900	***Connections*** *Types of Connections • Simple Shear Connections • Seated Beam Connections – Unstiffened • Stiffened Seat Connections • Triangular Bracket Plates*
0900 – 0915	*Break*
0915 – 1100	***Connections (cont'd)*** *Continuous Beam-To-Column Connections • Continuous Beam-To-Beam Connections • Rigid-Frame Knees • Column Base Plates • Beam Splices*
1100 – 1230	***Frames-Braced and Unbraced*** *Elastic Buckling of Frames • General Procedures for Effective Length • Stability of Frames under Primary Bending Moments • Bracing Requirements – Braced Frames • Overall Stability When Plastic Hinges Form*
1230 – 1245	*Break*
1245 – 1420	***Structural Steel and Bolting Inspection*** *International Building Code Provisions • Structural Steels • Fabricated Steel • Steel Erection • Approved Fabricators • High-Strength Bolting*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5

0730 – 0900	***Maintenance of Steel Structures*** *Maintenance Plan • Bridge Diagnosis Technology • Monitoring • Retrofitting*
0900 – 0915	*Break*
0915 – 1100	***Sustainability of Steel-Framed Buildings*** *Steel Construction Sustainability • Sustainability and Construction • Sustainability and Steel Construction • Specification of Key Issues*
1100 – 1230	***Durability of Steel Structures*** *Listing of Deterioration Mechanisms and Effects • Approaches to Design for Service Life • Probabilistic Approach to Service Life Design • Redundancy and Over Design*
1230 – 1245	*Break*
1245 – 1345	***Durability of Steel Structures (cont'd)*** *Maintenance Strategies • Life Cycle Cost • Environmental Life Cycle Assessment*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions/Site Visit

Site visit will be organized during the course for delegates to practice the theory learnt:-

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org