

COURSE OVERVIEW OE0170-4D
Offshore Structural Analysis Computer System (SACS®)

Course Title

Offshore Structural Analysis Computer System (SACS®)

Course Date/Venue

December 23-26, 2024/Al Aziziya Hall, The Proud Hotel Al Khobar, Al Khobar, KSA

Course Reference

OE0170-4D

Course Duration/Credits

Four days/2.4 CEUs/24 PDHs

Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

SACS is an integrated suite of software that supports the analysis, design and fabrication of offshore structures and will discuss the

fundamentals behind offshore structures with the overall objective to provide participants with an understanding of the design and construction of offshore structure using Structural Analysis Computer System (SACS®) software. SACS is the most comprehensive design and analysis package offered to both the offshore and civil engineering industries.

This course will cover offshore platforms and nomenclature; the role of SACS® in their design and analysis; system capabilities and new features, system configuration; structural models with SACS® using the graphical interface; method of creating a new model using the wizard; process of defining geometry; input material properties; user-defined loading and input environmental loading from waves, wind, current; as well as API RP-2A 20th/21st edition considerations and the hydrostatic and hydrodynamic properties necessary to input in the model.

During this interactive course, participants will be able to describe the load combinations modeling and gain knowledge on code check parameters; identify the analysis options for SACS® and input soil data from the geotechnical report; generate soil data and capacity curve plots and create joint can input file; execute the linear static analysis; conduct beam and finite element stress checks and tubular connection

punching shear check; review results, redesign interactively and learn the process of viewing soil graphs and plotting results; demonstrate the method of checking the SACS® model onscreen and examine the SACS® output; prepare and model piles, risers and appurtenances; explain the process of checking the SACS® model and entering the correct Ky/Kz or Ly/Lz properties for primary structural members; and provide alternative ways of entering soil data in PSI.

Course Objectives

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

- Apply an in-depth knowledge and skills in Offshore Structural Analysis Computer System (SACS®)
- Discuss offshore platforms and nomenclature and emphasize the role of SACS® in their design and analysis
- Determine the system capabilities and new features of SACS® and explain its system configuration
- Create structural models with SACS® using the graphical interface and demonstrate the method of creating a new model using the wizard
- Explain the process of defining geometry and demonstrate how to input material properties
- Describe user-defined loading and input environmental loading from waves, wind, current, etc.
- Recognize API RP-2A 20th/21st edition considerations and the hydrostatic & hydrodynamic properties necessary to input in the model
- Describe load combinations modeling and gain knowledge on code check parameters
- Identify the analysis options for SACS® and input soil data from the geotechnical report
- Generate soil data & capacity curve plots and create joint can input file
- Execute the linear static analysis and conduct beam and finite element stress checks and tubular connection punching shear check
- Review results and to redesign interactively and learn the process of viewing soil graphs & plotting results
- Demonstrate the method of checking the SACS® model onscreen and examine the SACS® output
- Prepare and model piles, risers & appurtenances and explain the process of checking the SACS® model & entering the correct Ky/Kz or Ly/Lz properties for primary structural members
- Provide alternative ways of entering soil data in PSI

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 provides an overview of all significant aspects and considerations of offshore structural analysis computer system (SACS®) for offshore structural, architectural, mechanical and civil engineers and designers. The course will also benefit naval engineers and technologists.

Training Methodology

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Workshops & Work Presentations
- 30% Case Studies & Practical Exercises
- 20% Software, Simulators & Videos

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

Course Fee

US\$ 6,750 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:-


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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 **2.4 CEUs** (Continuing Education Units) or **24 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.

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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.

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 Offshore Engineer** with over **30 years** of extensive and practical experience within the **Oil, Gas, Petrochemical** and **Petroleum** industries. His expertise includes **Pipelines & Piping Design, Inspection & Maintenance (ASME B31, API 579 & API 580), Offshore Structure Engineering, Risk-Based Inspection (RBI), Integrity Assessment, Forensic Analysis, Structural Analysis, Design & Engineering, Naval Architecture, Regulatory Compliance Inspections, Stress & Fatigue Analysis using SACS, StruCad, Caesar II and Finite Element Analysis** simulators. He was the **Technical Advisor** and **Engineering Manager** of a leading international engineering firm where he led all Inspections, Structural Engineering and Pipeline Projects for **Total-ELF, Shell and Mobil**.

During his career life, Mr. Manuel has gained his thorough practical experience in **multiple engineering disciplines** that includes pipeline/piping inspection and engineering, naval engineering, container cargo lashing, aerospace engineering and offshore structural engineering (oil and gas exploration platforms) through several challenging positions such as the **Senior Pipelines Engineer, Senior Piping Engineer, Senior & Lead Structural Engineer, Staff Engineer, Naval Architect** and **Applications Engineer** for various international companies including **Chevron, ExxonMobil, Addax Petroleum, ZAGOC, NASSCO, DWC, Point Engineering, US ARMY, W.S. & Atkins, Atlas Engineering, Heerema Offshore, Casbarian Engineering Associates (CEA), Textron Marine, Ingalls Shipbuilding and Peck & Hale**. Further, he has been heavily involved in the development of fabrication and erection drawings for offshore structures including installation and rigging as well as in the instruction materials as authorized by EDI (**Engineering Dynamic Incorporated**) for the training of engineers on the Structural Analysis Computer System (**SACS**) software.

Mr. Manuel has a **Bachelor** degree in **Mechanical Engineering** from the **State University of New York**. Further, he is a **Certified Internal Verifier/Trainer/Assessor** 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”**.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop 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 – 0900	Personnel Introductions & Software Installation
0900 – 0930	SACS Overview



0930 – 0945	Break
0945 – 1015	Offshore Platforms Nomenclature
1015 – 1045	Scope of Training & Training Strategy
1045 – 1115	System Capabilities & New Features
1115 – 1145	System Configuration
1145 – 1215	Using the Graphical Interface
1215 – 1230	Break
1230 – 1330	Questions & Answers
1330 – 1420	Creating the Model Using Wizard
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2

0730 – 0800	Defining Geometry & Material Properties
0800 – 0830	User-Defined Loading
0830 – 0930	Environmental Loading of Wave, Wind, etc
0930 – 0945	Break
0945 – 1030	API RP-2A 20th/21st Edition Considerations
1030 – 1100	Hydrostatic & Hydrodynamic Properties
1100 – 1130	Load Combinations Modelling
1130 – 1215	Code Check Parameters
1215 – 1230	Break
1230 – 1300	Analysis Options
1300 – 1330	Stage Assessment
1330 – 1420	Modelling & Generating API RP-2A 20th Soils
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 – 0800	Generating Soil Data & Capacity Curve Plots
0800 – 0830	Creating the Jointcan Input File
0830 – 0930	Executing the Linear Static Analysis
0930 – 0945	Break
0945 – 1030	Beam & Finite Element Check
1030 – 1100	Tubular Connection Punching Shear Check
1100 – 1130	Reviewing Results & Redesigning Interactively
1130 – 1215	Questions & Answers
1215 – 1230	Break
1230 – 1300	Viewing Soil Graphs & Plotting Results
1300 – 1330	Stage Assessment
1330 – 1420	Checking the SACS Model on Screen
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4

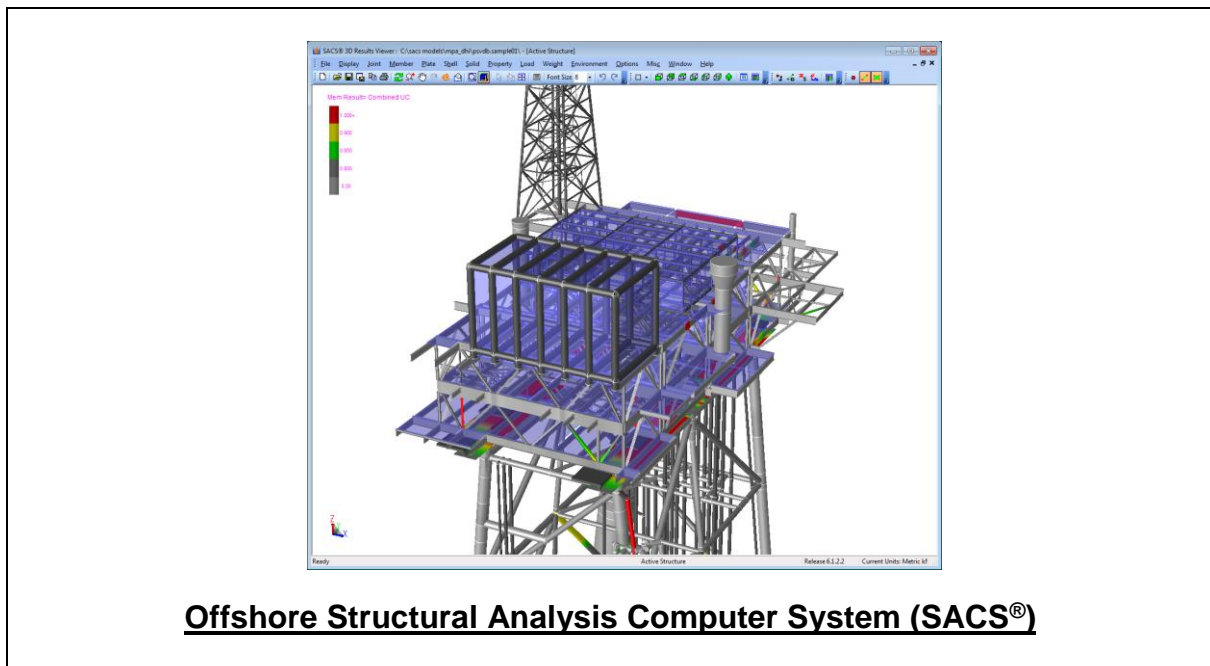
0730 – 0800	Examining the SACS Output
0800 – 0830	Modelling Piles
0830 – 0930	Checking the SACS Model for & Entering the Correct Ky/Kz or Ly/Lz Properties for Primary Structural Members



0930 – 0945	Break
0945 – 1015	<i>Modelling Risers & Appurtenances</i>
1015 – 1045	<i>Questions & Answers</i>
1045 – 1115	<i>Alternative Ways of Entering Soil Data in PSI</i>
1115 – 1145	<i>Stage Assessment</i>
1145 – 1215	<i>Knowledge Assessment</i>
1215 – 1230	Break
1230 – 1300	<i>Checking the Participants Work & Commenting on Difficulties Encountered</i>
1300 – 1345	<i>Course Critique</i>
1345 – 1400	<i>Course Conclusion</i>
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the “Offshore Structural Analysis Computer System (SACS®)” simulator.



Course Coordinator

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