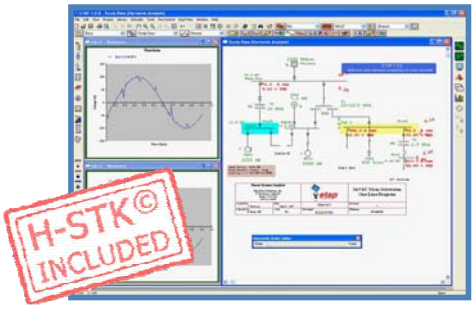
COURSE OVERVIEW EE0835-4D
ETAP: Electrical Power System Analysis

Course Title
ETAP: Electrical Power System Analysis

Course Reference
EE0835-4D

Course Duration/Credits
Four days/2.4 CEUs/24 PDHs



Course Date/Venue

Session(s)	Date	Venue
1	June 23-26, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	August 10-13, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	October 13-16, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	December 14-17, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

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.

This course is designed to provide participants with a detailed and up-to-date overview of Electrical Transient Analysis Programme (ETAP) and provides the full capabilities of the application to solve more complex power system problems. It covers a variety of power system solutions for generation plants, transmission, and industrial facilities. It considers the balanced/unbalanced power flow concept along with open phase faults in such networks, details of stability phenomena & dynamics in power systems, and arc flash hazards assessment & mitigation techniques utilizing auto evaluation of device coordination tools.

The course will also discuss the star systems, underground raceway systems (UGS), ground grid systems; panel systems, cable pulling systems and real-time systems (PSMS); the database, project management and configuration status; the one-line diagram GUI and AC elements; the instrumentation elements, AC-DC elements and DC elements; the protective devices and short-circuit; the star device coordination analysis, arch flash and load flow; and the transformer MVA sizing and dynamic models.

Course Objectives

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

- Apply and gain an in-depth knowledge on Electrical Transient Analysis Programme (ETAP)
- Discuss star systems, underground raceway systems (UGS), ground grid systems, panel systems, cable pulling systems and real-time systems (PSMS)
- Explain database and project management as well as configuration status
- Illustrate one-line diagram GUI and AC Elements
- Review instrumentation elements, ac-dc elements and dc elements
- Describe protective devices and short-circuit
- Define star device coordination analysis and identify arch flash and load flow
- Analyze transformer MVA sizing and dynamic models

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 electrical transient analysis for engineers, planners, supervisors and other technical staff interested in ETAP application.

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.

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 **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.

Course Fee

US$ 4,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

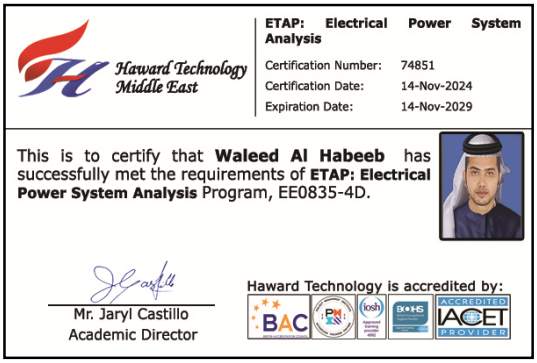
Course Certificate(s)

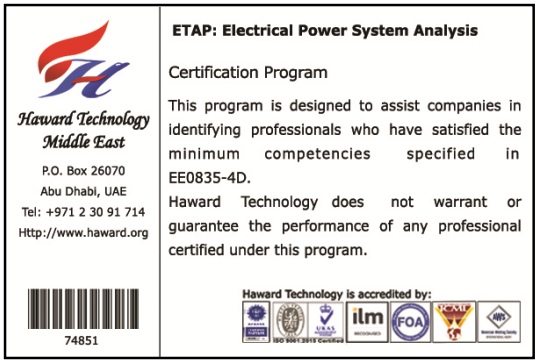
(1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-





(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 13-Nov-24

HTME No. 74851

Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
EE0835-4D	ETAP: Electrical Power System Analysis	Nov 10-13, 2024	24	2.4

Total No. of CEU's Earned as of TOR Issuance Date **2.4**

TRUE COPY

Jaryl Castillo
Academic Director

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

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org

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. Steve Mark, PE, MSc (on-going), BSc, is a **Senior Electrical & Telecommunications Engineer** with over **20 years** of extensive experience within the **Oil & Gas**, **Petrochemical** and **Power** industries specializing in **Certified Electrical Safety Compliance Professional**, Safety Instrumented Systems (**SIS**), Safety Integrity Level (**SIL**), **Overhead Power Line Maintenance Patrolling & Washing**, **Energy Transmission & Distribution**, **Transmission Line** Structures, **Insulators & Accessories**, **Transmission Line Construction & Maintenance**, **Insulated Power Cables**, **High Voltage Applications**, **Transmission Line Parameters**, **Sag & Tension of Conductor**, **Geomagnetic Disturbances**, **Reactive Power Compensation**, **Overhead Line Troubleshooting**, **Patrolling**, **Troubleshooting Safety**, **HV/LV Equipment**, **High Voltage Electrical Safety**, **LV & HV Electrical System**, **HV Equipments Inspection & Maintenance**, **HV Switchgear Operation & Maintenance**, **LV Distribution Switchgear & Equipment**, Basic **Electricity**, **Electrical & Special Hazards**, **Personnel Protection**, **Motor Controllers**, **Electrical Switching Practices**, **Emergency Planning**, **Safety Management**, **Earthing & Bonding Installation**, **Energized & De-Energized Work**, **Protection Relays**, **Testing & Commissioning**, **Lock & Tag Out**, **Circuit Breakers & Switchgears**, Portable **Cables**, **Transformers**, **Surge Arrestors**, **Isolators & Fuses**, **Capacitor Banks**, Earth & Shunt Reactors, Gas Insulated Substations (**GIS**), **HV Substation Inspection & Reporting**, **HV Cable Design**, **HV Electrical System Commissioning**, **HV Equipments Inspection & Maintenance**, **UPS & Generators**, Electrical Installations Design & Construction, **Electrical Mechanical Installations**, **GIS Substations**, **GE Turbine Power Plant** and **Steam Power Plants**. Further, he is also well-versed in **Network & System Administration**, Data/Voice Networking, Network Capacity Calculations, VPN Connection Implementation, Structured Cabling Constructions, Engineering Design, Security Installations Design & Implementation, Logistics Management, IT Analysis, Business Continuity Plan Design, Disaster Recovery Simulations, Supply Chain System Design, Barcode Marking & RFID Applications. He is currently the **Lead Electrical Engineer** of Public Power Corporation S.A wherein he is responsible for site manufacturing supervision of works and electrical maintenance support for the existing Steam Electrical Power Plant.

During his career life, Mr. Mark has gained his expertise and thorough practical experience through handling challenging positions such as being the **IT & Telecommunications Manager**, **IT & Organization Manager**, **Logistics Manager**, **Electrical Engineer**, **Safety Engineer**, **Public Works Contractor**, **IT Support Analyst**, **Project Supervisor**, **Systems & Network Administrator**, **Data Protection Officer**, Shop Auditor and Amateur Radio Operator for various multi-national companies and institutes.

Mr. Mark is a **Registered Professional Engineer**, has a Bachelor degree in **Electrical Engineering** from the **Technical University of Halkida**, **Euboea**, **Greece** and currently enrolled for **Master** degree in **Quality Management** from the **Hellenic Open University**. Further, he is a **Certified Instructor/Trainer**, a **Certified Safety Engineer** and a **Certified Data Protection Officer** (**DPO**). Moreover, he is a member of Scientific Society of Technological Education of Engineers (EETEM) and has delivered numerous trainings, courses, seminars, workshops and conferences internationally.

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 – 0900	***ETAP Description & Overview***
0900 – 0915	***Star Systems***
0915 – 0930	***Underground Raceway Systems (UGS)***
0930 – 0945	***Ground Grid Systems***
0945 – 1000	*Break*
1000 – 1030	***Panel Systems***
1030 – 1100	***Cable Pulling Systems***
1100 – 1130	***Real-Time Systems (PSMS)***
1130 – 1200	***Advisory & Supervisory Control***
1200 – 1215	*Break*
1215 – 1315	***Database & Project Management***
1315 – 1330	***Configuration Status***
1330 – 1400	***One-Line Diagram GUI*** *Edit A One-Line Diagram ● Display Options ● Default Display Options ● Annotation Font ● Result Annotation*
1400 – 1420	***AC Elements*** *Bus ● Transformer ● Cable ● Transmission Line ● Impedance ● Power Grid ● Generator ● Induction Machine ● Synchronous Motor ● Capacitor ● Power Panel ● Harmonic Filter ● Fuse ● Contactor ● High Voltage Circuit Breaker ● Low Voltage Circuit Breaker ● Ground Grid*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Instrumentation Elements*** *Current Transformer ● Potential Transformer ● Voltmeter*
0900 – 0915	*Break*
0915 – 1100	***Instrumentation Elements (cont'd)*** *Ammeter ● Protective Relay ● MV Solid State Trip Relay*
1100 – 1230	***AC-DC Elements*** *UPS (Uninterruptible Power Supply) ● VFD (Variable Frequency Drive)*
1230 – 1245	*Break*
1245 – 1420	***DC Elements*** *DC Bus ● DC Cable ● DC Impedance ● DC Motor*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

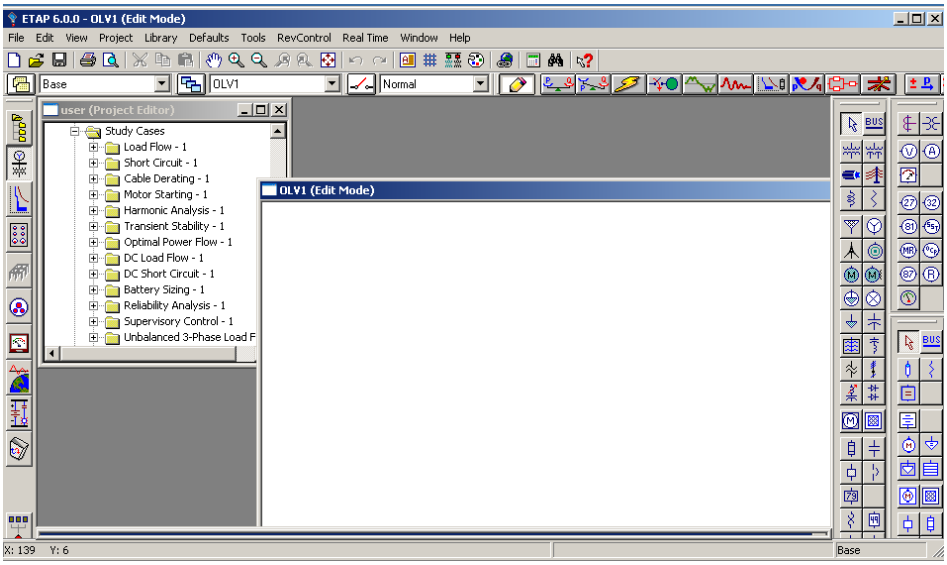
0730 – 0930	***Protective Devices*** *Coordination & Selectivity ● AC & DC Coordination ● Graphically Adjustable Device Settings ● Extensive Device Library (Verified & Validated) ● Embedded Short Circuit Analysis ● Embedded Motor Acceleration Analysis ● Integrated with One-Line Diagram ● Multi-Axis Time Current Curves ● Comprehensive Plot Options ● Adjustable Magnifying-Glass Zoom View ● Time Difference Calculator ● Multi-Function/Level Relays ● Device Setting Reports*
0930 - 0945	*Break*
0945 – 1100	***Short-Circuit*** *ANSI Short-Circuit Toolbar ● IEC Short-Circuit Toolbar ● Study Case Editor ● ANSI/IEEE Calculation Methods ● IEC Calculation Methods ● AC-DC Converter Models*
1100 – 1230	***Star Device Coordination Analysis***
1230 – 1245	*Break*
1245 – 1420	***Arc Flash*** *Short-Circuit Study Case ● Arc Flash Alert ● Running Arc Flash Analysis ● Calculation Methodology ● Arc Flash Reports*
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 – 0930	***Load Flow*** *Calculation Methods ● Panel System Load Flow Calculation ● Load Flow Result Analyzer*
0930 – 0945	*Break*
0945 – 1100	***Transient Stability*** *Calculation Methods ● Output Reports ● One-Line Diagram Displayed Results*
1100 – 1230	***Transformer MVA Sizing*** *Winding Transformer MVA Sizing ● Calculation Method*
1215 – 1230	*Break*
1230 – 1345	***Dynamic Models*** *Induction Machine ● Synchronous Machine ● Power Grid ● Excitation System ● Governor-Turbine ● Power System Stabilizer (PSS) ● Mechanical Load ● Static Var Compensator Models*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (Hands-on Practical Sessions)

Practical session 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 simulator ETAP Software.



ETAP Software Simulator

Course Coordinator

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