

AMERICAN WELDING SOCIETY

CERTIFIED WELDING ENGINEER

PART# 1 & 2

Certification Program for the Year-2025

Online Seminar

&

Online Prometric Exam

Authorized International Agency:



BETZ ENGINEERING & TECHNOLOGY ZONE

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BETZ ENGINEERING & TECHNOLOGY ZONE

About Us

BETZ Engineering & Technology Zone is an accredited International Agency for the American Welding Society, Florida, U.S.A., to conduct Seminars and Certification Programs for AWS in India and Worldwide. BETZ is an ISO 9001:2015 company. Also BETZ is the Only ‘ATF – Accredited Test Facility’ of AWS to evaluate and certify welders in India.

BETZ has been assessed and accredited by NABL in accordance with the standard ISO/IEC/17025 in the field of Testing , Non-Destructive Testing & Mechanical Testing Certificate

OVERVIEW- CWEng

The role of the Welding Engineer is critical to the integrity of the vast number of buildings, vehicles, machinery, and products that require welds. The Welding Engineer can direct those operations associated with weldments and other types of joints that are completed by the appropriate contract documents, codes, and other standards to produce a satisfactory product. The welding engineer’s activities begin before production or construction welding and continue through the production process, ending when the production process is complete.

The American Welding Society (AWS) Certified Welding Engineer (CWENG) certification is among the best and respected in the industry. For more information, please review the following governing Standard:

AWS-CWEng Part# 1 & 2 SCHEDULE-2025

AWS-CWENG PART#1 & 2 , Scheduel-2025			
Month	Site Code	AWS-CWEng Part # 3 & 4 (Evening & Holidays Class)	Online Exam (Based on Availability from Prometric Centre)
March	IN74125	24 to 29	Monday, March 31, 2025
April	IN74225	25 to 30	Thursday, May 1, 2025
May	IN74325	24 to 29	Saturday, May 31, 2025
June	IN74425	25 to 30	Monday, June 30, 2025
July	IN74525	25 to 30	Thursday, July 31, 2025
August	IN74625	24 to 29	Sunday, August 31, 2025
September	IN74725	25 to 30	Tuesday, September 30, 2025
October	IN74825	24 to 29	Friday, October 31, 2025
November	IN74925	24 to 29	Sunday, November 30, 2025
December	IN75025	23 to 29	Tuesday, December 30, 2025

****Exam Dates – Based on availability of Prometric Centre at your Home Down**

Eligibility:

In order to qualify for a certified welding engineer the candidate must be an individual

- a. Having Bachelor of Engineering (B.E) degree and a minimum of one (1) year relevant experience.**
- b. Having Bachelor of Technology (B.Tech.) degree and a minimum of two (2) years relevant experience.**
- c. Having other related Bachelor of Science (B.Sc.) degrees and a minimum of five (5) years of relevant experience.**
- d. Having an Associate in Applied Science (A.A.Sc.) degree and a minimum of ten (10) years of relevant experience.**
- e. who have successfully completed high school or an equivalent program and a minimum of fifteen (15) years relevant experience.**

Exam pattern

The AWS Certified Welding Engineer (CWEng.) examination consists of four parts. Parts 1 and 2 must be successfully completed in order to take Parts 3 and 4. The first two parts (1 and 2) of the exam are closed book Online Exam and covers fundamentals of basic science and applied science. Exam will be of two hours for each part with multiple-choice questions Each examination is Two hours in length, Part 1 consists of 35 questions of multiple choices Question and Part 2 has 25 questions of multiple choice Questions . Successful candidates must correctly answer 60% of the questions to pass the examination.

Examinations for Parts 3 and 4 are open book examinations on welding related disciplines and practical welding and related applications. Each examination is three hours in length (Duration). Part 3 has 60 questions of multiple-choice questions Part 4 has 40 questions of multiple choice type. Candidates that successfully pass Parts 1 and 2 will be invited to sit for Part 3 and Part 4 examinations and a separate application must be submitted to AWS.

Candidates must pass each of the four examinations with an individual score of not less than 60% and attain a minimum weighted percentage of 70% for all 4 parts.

Seminar Pattern

These Six days course focuses on the fundamental knowledge in Basic Sciences (Part #1) of Mathematics, Physics, Chemistry, and applied sciences of (Part # 2) strength of Materials, Heat Transfer & Fluid Mechanics and Electricity.

- a. 2 days seminar will be conducted to cover the fundamentals of basic sciences of Part-1 examination that covers all the facets of AWS B5.16, knowledge of mathematics, physics and chemistry.
- b. 3 days seminar will be conducted to cover the Applied science fundamentals of Part-2 examination that covers the area of strength of materials, heat transfer, fluid mechanics and electricity.
- c. 1 day will be totally dedicated to discussion & review of Parts#1 and 2.

Part #1 – Basic Science Fundamentals

Mathematics:

- Simple Calculations (multiple choices)**
- Special Functions (exp, log)**
- Trigonometric Functions (sin, cos, tan, cot, sec, csc, degrees, radians)**
- Algebraic Equations (linear, quadratic, polynomial)**
- Graphs And Equations (slope, intercept, roots, derivatives, minimum, maximum, interpolation and extrapolation)**
- Geometry (common geometric shapes)**
- Hyperbola, Parabola**
- Complex Numbers**
- Calculus (fundamentals of differential equations)**
- Statistics (population and samples: normal distribution, mean, standard deviation and variance)**
- Simple correlation: linear regression via least squares method, r2 correlation)**

Physics:

- Unit Conversion (dimension, mass, temperature, time, energy, power)**
- Mass, Weight, Volume, Density**
- Force, Energy, Work Done, Power**
- Stress, Strain, Hooke’s Law (elasticity)**
- Moment And Momentum**
- Temperature, Heat, Temperature Measurement, Thermocouples, Pyrometers**

Thermal Properties of Materials (Thermal Conductivity, Thermal Expansion, Thermal stress and strain

Chemistry:

Symbols (elements and inorganic compounds—gases, fluxes, etc.)

Molecular Weight and Stoichiometry

Acids and Bases

Balance Chemical Equations

Gas Combustion Reactions (chemical heat generation) and oxidation-reduction

reactions Ideal Gas Law (pressure, volume, temperature)

Mass Balance (as in E7018 coating decomposition to gas, slag and metal)

Bulk and Chemical Analysis Methodologies

Reactivity, Toxicity, Environmental Effect, Disposal.

Part #2 – Applied Science Fundamentals

Strength of Materials:

Load, Deformation (elastic and plastic, buckling), Stress- Strain, Young’s Modulus, Shear Modulus, Stress-

Strain Curve (yield stress, ultimate tensile stress, elongation) and tensile stress

Shear stress computation

Welded member cross-section effect

Mechanical testing (tensile, bend, fracture toughness, hardness, creep, and fatigue) and data interpretation

Law of Conservation of Energy/Momentum

Stress analysis

Typical engineering material properties

Heat Transfer and Fluid Mechanics:

Heat Conduction, Convection and Radiation, Thermal Conductivity and Diffusivity, Heat Transfer

Coefficients of Engineering Materials and Fourier’s Law

Heating Rate and Cooling Rate

Industrial Heating Methods, Power Consumption and Gas Flow Rates

Laminar and Turbulent Flow (reynold’s number), Dew Point and Relative Humidity, Pressure and

Regulators Venturi Effect and Gas Velocity Calculation

Atmospheric Pressure and Hyperbaric Conditions

Vacuum Equipment and Measurements

Electricity:

Current, Voltage, Resistance, Impedance and Circuits

Ohm's Law

Kirchhoff's Law

Resistance Loss and Current Rectification

Power Generation

AC/DC, polarity

Power Factor, Electromagnetic Properties, Right-Hand Rule

Current and Voltage Measurements (devices and principles)

The **BETZ Faculty** includes **Professors** who have retired from leading Indian institutions. To add value, AWS handles the Code and Practical welding sessions- Qualified and Certified personnel and industry veterans with extensive on-site and deployment experience.

Exam Pattern

Examination	Number of Questions	Duration	Min % to Pass	Exam Pattern
<u>Prometric Exam</u>				
Part 1-Basic Science	35	2 Hrs	60%	Closed Book
Part 2-Applied Science	25	2 Hrs	60%	Closed Book

Minimum Weighted Percentage for all Four Parts

Registration Process

All the registrations are to be completed preferably Five (5) weeks prior to the commencement of seminar with full payment to avoid disappointment. For more information call us on 9840175179 / 9551665683.

E-mail: registration@welding-certification.com / rg_ganesan@yahoo.com Upon completion of registration process, candidates can collect their Hard copy of study materials and AWS QC1:2016 Specification for AWS Certification of Welding Inspectors. This will help candidates to start their preparations immediately.

BETZ ENGINEERING & TECHNOLOGY ZONE



Mode of Payments:

*Seminar Fee: Rs.40,000/- wire transfer to the following account.

*Name: BETZ Educational & Research Division

*Bank: Karur Vysya Bank Ltd

*Branch: Alandur

*Account Number: 1104115000021458

*IFSC: KVBL0001104

*Exam Fee: USD755+120 wire transfer to the following account

*Company Name :Betz Engineering Inc.

*Bank Name : JP Morgan Chase

*Account No: 629867527

*Routing Number : 322271627

*Swift Code : CHASUS33

*Bank Address: JP Morgan Chase

*334 S Diamond Bar Blvd

*Diamond Bar, CA 91765, USA

*USD120 for Prometric Sitting was also transferred to the above account.

ALL THE BEST