Certified Lighting Efficiency Professional

An Industry Recognized Certification
for Lighting Efficiency Professionals

CERTIFICATION SCHEME **1.0**

Version No: 1.0
Effective Date: 6/16/2025

Association of Energy Engineers

Scope

Certified Lighting Efficiency Professionals understand a building's lighting requirements based on the occupancy and use of a given space, whether the application is illuminating a new building or retrofitting existing buildings to the most current lighting technologies. They measure, verify, and evaluate lighting efficiency projects, including the human-factor implications, technologies, and financial incentives to compare savings against other energy efficiency projects and identify ROI.

Certified Lighting Efficiency Professionals demonstrate competency in the following areas that are included in the CLEP™ Body of Knowledge to gain certification: language of light and lighting efficiency; lighting quantity and quality fundamentals; color, visibility, and health; traditional light source lamps and ballasts and their operating characteristics; LED technology and its operating characteristics; lighting maintenance and environmental safety; lighting controls; lighting audits; lighting photometrics, reports, and IES files; lighting calculations; financial analysis metrics and calculations.

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Eligibility Requirements for Competence

Individuals applying for the CLEP™ Certification Examination must attend an approved preparatory training course, meet the following education and experience requirements, and complete a certification application.

Education and Experience Requirements

Education and Experience
4-year engineering/architectural degree OR Professional Engineer (PE) OR Registered Architect (RA) and 3+ years related* experience
4-year degree in business (or related) and 5+ years related* experience
2-year associate degree and 5+ years related* experience
NONE and 10+ years related* experience
Current status of Certified Energy Manager® (CEM®) and 3+ years related* experience

*Related experience in lighting efficiency

Examination Requirements for Competence

To earn the CLEP™ Certification, candidates must pass the certification examination. The competency requirements assessed are the following:

Certified Lighting Efficiency Professional - Examination Blueprint

Body of Knowledge / Duties and Tasks (% Exam)	
1	**Language of Light and Lighting Efficiency (8% - 12%)**
101	3 pillars of energy efficient lighting
102	Light and the radiant energy spectrum
103	Global differences in color preferences, electrical, utilities, voltages, lamp voltages, etc.
104	Lighting terms and definitions
105	Reflection, absorption, transmission, diffusion
106	Vision and the eye
107	Intrinsically photosensitive Retinal Ganglion Cells (ipRGCs) and Scotopic Photopic (SP) Ratio Visual Effective Lumens (VEL)
108	4 factors of visibility (size, time, luminance, and contrast)
2	**Lighting Quantity and Quality Fundamentals (8% - 12%)**
201	Illumination – Footcandles (FC) or Lux
202	Horizontal and vertical FC recommendations
203	Uniformity – average to min and max to min ratios
204	Volumetric light distribution
205	White tuning
206	Glare, Unified Glare Rating (UGR), Glare Rating (GR), and Veiling Reflections, Visual Comfort Probability (VCP), and Backlight Uplight Glare (BUG) ratings
207	Flicker
3	**Color, Visibility, and Health (8% - 12%)**
301	Color Metrics – Correlated Color Temperature (CCT), Color Rendering Index ((CRI) R1 - R14), R9, Spectral Power Distribution (SPD)
302	Advanced color metrics – Distance and direction of a color shift from u-v coordinates (Duv), MacAdam ellipse, Gamut and Fidelity, ANSI binning
303	Visibility
304	Health – circadian rhythm, circadian lighting, human centric lighting, metrics for circadian lighting, white tuning

Body of Knowledge / Duties and Tasks (% Exam)	
4	**Traditional Light Source Lamps and Ballasts and their Operating Characteristics (4% - 6%)**
401	Incandescent
402	Halogen and Halogen IR
403	Compact Fluorescent (CFL) & Long CFL
404	Linear fluorescent – T12, T8, T5, T5 High Output (HO)
405	Metal halide – probe start, pulse start and ceramic
406	High Pressure Sodium (HPS)
407	Low Pressure Sodium (LPS)
408	Induction
5	**LED Technology and its Operating Characteristics (8% - 12%)**
501	History of LEDs
502	LED definition and component parts of an LED package
503	Phosphor and LEDs (more and less)
504	Lighting measurement of lighting and electrical characteristics of an LED luminaire (i.e. IES-LM-79), lighting measurement of LED component and lumen depreciation (i.e. LM-80) and technical memorandum on LED lumen maintenance and life in a fixture (i.e. TM-21); L and B factors
505	Testing and rating of lamps and fixtures (i.e. Energy Star and Design Lights Consortium (DLC))
506	Fixtures, modules, lamps, bars, kits
507	TLED types – ballast compatible, hybrid, ballast bypass, ballast replacement (i.e. UL Type A/B Hybrid, B and C), single-ended, double-ended and single-double ended, rapid start, program start, instant start
508	Shunted vs non-shunted sockets
509	Instant start vs rapid start and sockets
510	Lamps vs retrofit kits vs new fixtures
511	LED maintenance, retrofit or replacement options
6	**Lighting Maintenance and Environmental Safety (4% - 6%)**
601	Compare traditional sources and LED for spot and group relamping
602	Calculating the group relamping interval
603	Recoverable and non-recoverable light loss factors
604	Average rated life and LED useful life
605	Troubleshooting and avoiding mistakes during maintenance

Body of Knowledge / Duties and Tasks (% Exam)	
606	Maintenance checklist
607	Mercury disposal options
608	PCBs and ballast
609	Universal waste rule and lamps recycling
610	TCLP test
611	Traditional and LED disposal options
612	The use of Ultra Violet light (UV-C) to kill viruses
7	**Lighting Controls (8% - 12%)**
701	Lighting controls save energy and more
702	Types of controls: switching, individual fixture dimming, network controls
703	Sensor technology – vacancy vs occupancy; sensor types and their application
704	Dimming types (phase cut, 3-wire, 0-10V, universal, digital, Pulse Width Modulation (PWM))
705	Constant Current vs Pulse Width Modulation
706	Dimming limitations and compatibility issues
707	Quality of dimming
708	Strategies for network lighting controls
709	Network lighting control layering to maximize savings
710	Influencing factors to consider when using controls – what to use where
8	**Lighting Audits (4% - 6%)**
801	Parts of a lighting audit
802	Preliminary and detailed audits
803	A lighting audit step-by-step guide
804	Identification of lighting equipment
805	Audit tools (illuminance meter and / or spectrometer, electronic yardstick, data gathering tools, binoculars, hand mirror, hand calculator)
806	How to determine lighting energy and input watts
807	Identification of opportunities to manage energy
808	Calculation of cost and savings
809	Writing lighting audit reports

Body of Knowledge / Duties and Tasks (% Exam)	
9	**Lighting Photometrics, Reports, and IES Files (8% - 12%)**
901	Photometric reports, measurement equipment and independent lab certification
902	How to read all parts of a photometric report
903	Reading an LED photometric report
904	IES format photometric files for calculations
905	Comparing one photometric report to another
10	**Lighting Calculations (12% - 18%)**
1001	Calculating illuminance at a point
1002	Lumen method (zonal cavity) for average maintained FC – Room Cavity Ratio (RCR), Reflectances, Coefficient of Utilization (CU), Light Loss Factor (LLF), Spacing Criterion (SC)
1003	Understand and calculating light loss factors
1004	Interpolation to determine CU
1005	Zonal cavity with LED fixtures
11	**Financial Analysis Metrics and Calculations (8% - 12%)**
1101	Types of financial analysis used for lighting projects
1102	Read and calculate a monthly electric utility bill
1103	Lighting rebates and qualified products
1104	Manual calculations for annual energy use and maintenance costs, HVAC savings, Payback, Return on Investment (ROI)
1105	Life cycle cost
1106	Time value of money calculations
1107	Net Present Value (NPV) and life cycle cost
1108	Manual calculation of NPV for one year and multiple years
1109	Available programs for financial calculations that true up lighting change-out alternatives

Examination Specifications

The examination will be 4-hours, open book / open notes and follow the specifications outlined in the examination blueprint and will include 120 multiple-choice graded questions in accordance with the percent range for each task.

Code of Ethics

Codes of Practice are found in the Code of Ethics for Certified Professionals V1.1 dated November 21, 2019, available at **www.aeecenter.org/CodeOfEthics**

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Recertification Requirements

A CLEP™ must accumulate ten professional credits every three years and submit a completed Renewal Form to AEE to remain certified. Professional credits for recertification can be accumulated at any time within the three-year period. Detailed explanation of activities applicable as credits for certification renewal available at **www.aeecenter.org/certification/renewal**

Activities for CLEP™ Renewal Credits

Continued employment in lighting efficiency activities:
- **1 credit per year**

Membership in a professional engineering society
- **1 credit per year**

Offices held in a professional engineering society:
- **1 credit per year**

Continuing education (CEU's) / professional activities (seminars or conferences) including but not limited to lighting efficiency
- **2 credits per CEU, college credit hour or 10 contract hours for training**

Awards presented and/or papers published involving lighting efficiency:
- **1 credit per: one energy-related presentation**
- **2 credits per: one energy-related paper**
- **2 credits per: one energy-related individual award**

Certified Professionals who do not acquire sufficient CLEP maintenance points to be recertified on the recertification date will no longer have an active certification and be notified in writing of suspension from using the CLEP designation. They will also no longer be listed as a CLEP in any AEE publication. A lapsed CLEP must resubmit to the certification process and successfully meet the criteria for certification by personal data information and examination. Another option for certified professionals is to acquire make-up points at a cumulative total equal to 3.5 per year for every year since date of expiration. This option is available one-time only. Certifications that have lapsed more than three renewal cycles must retake and pass the CLEP exam.

A CLEP, upon retiring and/or and reaching the age of sixty-five, can be designated as "CLEP™ – Retired," will no longer be required to pay renewal fees, and will no longer be listed in our directory of actively practicing CLEPs. No further reporting is necessary except to notify AEE of meeting the age requirement by sending a copy of the retired CLEP's Driver's License and completing the Retired Certification Request Form online.

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