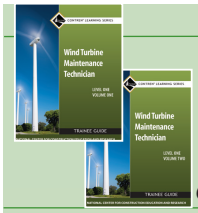
L1 WIND TURBINE MAINTENANCE TECHNICIAN



LEVEL 1

GBCI CMP

Curriculum Notes

- Volume 1: 197.5 Hours (Includes 100 hours of *Power Industry Fundamentals*, which is a prerequisite for Level 1 completion and must be purchased separately. See p. 83 for ordering information.)
- Volume 2: 110 Hours
- Published: 2011
- Instructor's Guide includes access code to download TestGen software, module exams, PowerPoints®, and performance profile sheets from www.nccerirc.com.
- *Introduction to Wind Energy* (Module ID 58101-11) has been approved for 15 general continuing education hours under GBCI's Credential Maintenance Program.

PAPERBACK	ISBN
VOLUME 1	
Trainee Guide: $32.50	978-0-13-271895-0
Instructor's Guide: $32.50	978-0-13-272049-6
VOLUME 2	
Trainee Guide: $32.50	978-0-13-271896-7
Instructor's Guide: $32.50	978-0-13-272057-1

MODULES (Volume 1)

All of the modules listed below are included in the Trainee Guide and the Instructor's Guide. The following ISBN and pricing information is for ordering individual modules only.

Introduction to Wind Energy *(15 Hours)*
Trainee $22 ISBN 978-0-13-215452-9
Instructor $22 ISBN 978-0-13-215453-6
(Module ID 58101-11) Introduces the fundamentals of generating electrical power from wind energy. A brief history of wind energy is included as well as wind science, the interception of wind energy through a rotor, and an identification of major wind turbine generator components.

Introduction to Wind Turbine Safety *(12.5 Hours)*
Trainee $20 ISBN 978-0-13-272945-1
Instructor $20 ISBN 978-0-13-272958-1
(Module ID 58102-11) Introduces safety concerns of working inside the wind turbine and in the wind farm environment. Expands on earlier safety training and provides coverage of electrical arc flash safety.

Climbing Wind Towers *(40 Hours)*
Trainee $20 ISBN 978-0-13-272946-8
Instructor $20 ISBN 978-0-13-272959-8
(Module ID 58103-11) Covers all aspects of climbing wind turbine lattice towers and tubular towers. Discusses proper climbing equipment and equipment inspection, environmental hazards, proper climbing techniques, and common wind turbine safe climbing guidelines.

Introduction to Electrical Circuits *(7.5 Hours)*
(Module ID 26103-11; from *Electrical Level One*)
Trainee $20 ISBN 978-0-13-257810-3
Instructor $20 ISBN 978-0-13-266118-8

Electrical Theory *(7.5 Hours)*
(Module ID 26104-11; from *Electrical Level One*)
Trainee $20 ISBN 978-0-13-257811-0
Instructor $20 ISBN 978-0-13-266119-5

Electrical Test Equipment *(5 Hours)*
(Module ID 26112-11; from *Electrical Level One*)
Trainee $20 ISBN 978-0-13-257820-2
Instructor $20 ISBN 978-0-13-266128-7

Electrical Wiring *(10 Hours)*
Trainee $20 ISBN 978-0-13-272947-5
Instructor $20 ISBN 978-0-13-272960-4
(Module ID 58104-11) Describes types and applications of conductors as well as their installation techniques. Also describes the technique and components used for terminating and splicing conductors.

MODULES (Volume 2)

All of the modules listed below are included in the Trainee Guide and Instructor's Guide. The following ISBN and pricing information is for ordering individual modules only.

Alternating Current and Three-Phase Systems *(17.5 Hours)*
(Module ID 80201-11; from *Power Line Worker, Distribution Level Two*)
Trainee $20 ISBN 978-0-13-274259-7
Instructor $20 ISBN 978-0-13-274266-5

Circuit Breakers and Fuses *(10 Hours)*
Trainee $20 ISBN 978-0-13-272948-2
Instructor $20 ISBN 978-0-13-272961-1
(Module ID 58105-11) Explains the necessity of overcurrent protection and the way it is applied in the wind turbine environment. Explores the operation of common circuit breakers and the differences in various fuse types. Overcurrent device terminology is presented, along with a review of the information found on such devices.

Switching Devices *(12.5 Hours)*
Trainee $20 ISBN 978-0-13-272950-5
Instructor $20 ISBN 978-0-13-272962-8
(Module ID 58106-11) Provides coverage of switching devices related to the power distribution and control of wind turbines. Mechanical and solid-state relay types are presented, as well as typical wind turbine control wiring diagrams. Explains various time delay schemes and how they can be applied.

Wind Turbine Power Distribution Systems *(12.5 Hours)*
Trainee $20 ISBN 978-0-13-272951-2
Instructor $20 ISBN 978-0-13-272963-5
(Module ID 58107-11) Discusses the basics of power generation and the generators used in wind turbines. Reviews how power is distributed and controlled during various modes of wind turbine operation. Simple one-line diagrams are also covered.

Fasteners and Torquing *(20 Hours)*
Trainee $20 ISBN 978-0-13-272952-9
Instructor $20 ISBN 978-0-13-272965-9
(Module ID 58108-11) Presents comprehensive coverage of wind turbine fasteners and their required characteristics. Covers torque theory, torquing, tensioning, and hydraulic torquing equipment. Presents the use and care of all significant torquing and tensioning tools. The use of taps and dies is also introduced.

Introduction to Bearings *(15 Hours)*
(Module ID 32207-07; from *Industrial Maintenance Mechanic Level Two*)
Trainee $20 ISBN 978-0-13-272954-3
Instructor $20 ISBN 978-0-13-272967-3

Lubrication *(12.5 Hours)*
Trainee $20 ISBN 978-0-13-272953-6
Instructor $20 ISBN 978-0-13-272966-6
(Module ID 58109-11) Explores basic lubrication theory and related equipment. Includes the different applications and types of lubricants used in the wind turbine environment. Reviews OSHA's hazard communication program and the EPA's hazardous waste control program. Includes in-depth coverage of material safety data sheets.

Introduction to Hydraulic Systems *(10 Hours)*
Trainee $20 ISBN 978-0-13-272957-4
Instructor $20 ISBN 978-0-13-272969-7
(Module ID 58110-11) Covers all aspects of common hydraulic systems, including fluids, system components, and pumps. Presents the principles of hydraulic system operation and the related components. Simple hydraulic system maintenance is also introduced.

GREEN TOPICS IN HVAC

GBCI CMP

In the typical American household, heating, cooling and lighting consumes 67% of all the electricity that's generated. With buildings being the leading source of greenhouse emissions, it is no surprise that HVAC systems have become primary targets in this energy conservation battle. In these four modules, we explore the methods and opportunities for increasing the efficiency of energy use and the quality of air that we breathe. These modules have been individually approved by GBCI for continuing education (CE) under its Credential Maintenance Program. CE hours are included next to the Module titles.

SPIRAL BOUND	ISBN
Trainee Guide: $65	978-0-13-611998-2
Instructor's Guide: $65	978-0-13-611999-9

MODULES	
Air Quality Equipment (*5 Hours*)	03204-07
Indoor Air Quality (*10 Hours*)	03403-09
Energy Conservation Equipment (*10 Hours*)	03404-09
Alternative Heating and Cooling Systems (*10 Hours*)	03409-09