

# Testing, Adjusting, and Balancing Metric CP/CT Seminar, Written Exam & CP Practical Exam Opportunity

May 27-30, 2024

Melbourne, VIC Australia

## This Seminar is Designed for:

- Professionals with a strong background in HVAC and TAB work considering an extensive review to enhance their technical education.
- Qualified Candidates for the NEBB TAB Certified Professional (CP) Exam.
- Qualified Candidates for the NEBB TAB Certified Technician (CT) Exam.
- Experienced NEBB CT seeking to advance to the NEBB CP level.
- Building Commissioning Agents
- Facility Managers & Operators
- Mechanical Contractors
- Energy Auditors and Engineers
- Other Professionals interested in learning about TAB.

## The TAB CP/CT Seminar & Practical Exams are first come, first served:

- A minimum of 15 attendees is required to hold this TAB CP/CT Seminar, so do not delay your registration and payment.
- TAB CP/CT Seminar May 27<sup>th</sup>-30<sup>th</sup> with
- Paper Written Exams will be May 31<sup>st</sup>.
- Practical Exams will be scheduled June 3<sup>rd</sup>-7<sup>th</sup>, 20-candidates limit.
- **If the TAB CP Seminar does not meet the minimum and is cancelled, the practical exams will not be offered, and a refund will be issued to those who confirmed their spot.**

## Location:

Holmesglen Institute  
Chadstone Campus  
HVAC Centre of Excellence  
Corner Batesford & Warrigal Road  
Chadstone VIC 3148, Australia

**Complete the NEBB TAB CP/CT exam process in one trip to Melbourne, Australia. Complete the TAB CP/CT Seminar, TAB CP/CT Written Exam, and the CP Practical Exam back-to-back.**

## Registration Deadline:

**April 15, 2024**





## Our COVID-19 Response Plan

Considering COVID-19, NEBB has taken several proactive steps to help ensure the health and safety of our attendees and instructors. Precautions such as constant sanitization of the seminar area, increased attention to high-touch areas in the rooms, limits on the number of attendees during the seminar and protective gear for our instructors and are in place. NEBB also will be practicing social distancing and maintaining 3 feet apart.

### Responsibilities for Each Attendee:

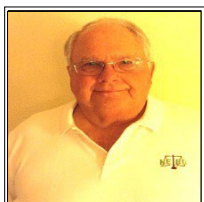
- If you are experiencing any symptoms of COVID-19 like running a fever, coughing, or shortness of breath, please do not attend the seminar.
- You have been exposed to someone who has tested positive for COVID-19 in the last 14 days.
- You have a compromised immune system or are considered “high risk.”
- Wearing a mask is requested during the seminar and gloves can be worn if desired.
- Sanitize hands prior to entering the seminar location.
- Avoid shaking hands or engaging in any unnecessary physical contact.
- Signing a waiver prior to the seminar

## May / June 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
May 26	May 27	May 28	May 29	May 30	May 31	June 1
	TAB CP/CT Seminar Day #1	TAB CP/CT Seminar Day #2	TAB CP/CT Seminar Day #3	TAB CP/CT Seminar Day #4	Written Exam	
June 2	June 3	June 4	June 5	June 6	June 7	June 8
	TAB CP Practical Exam Day #1	TAB CP Practical Exam Day #2	TAB CP Practical Exam Day #3	TAB CP Practical Exam Day #4	TAB CP Practical Exam Day #5	

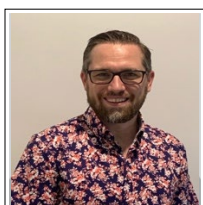


## Seminar Instructors



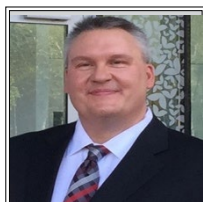
**Andy Nolfo, PE**

Andy Nolfo has more than 45 years of experience in the Mechanical Engineering, Testing, Adjusting and Balancing, and Commissioning industry. He has been a Registered PE since 1977 and the key author and editor of many NEBB publications. He is a current member of the NEBB TAB Committee and a past NEBB Technical Director. As one of the original authors of the NEBB National TAB CP Review Seminar, Nolfo provides training for additional instructors and helps maintain continuity in continued growth of the TAB seminars.



**Jonathen Lloyd, NEBB CP**

Jonathen Lloyd is from Queensland Australia; he has worked in the TAB and Commissioning field since 2000. He currently serves on the NEBB TAB Committee and holds NEBB Certified Professional certification in Testing, Adjusting and Balancing of Environmental Systems.



**Donald Pittser, NEBB CP, TAB Committee Chair**

Donald Pittser, President of JEDI Balancing Inc. founded in 2000 in Colorado, has more than 35 years' experience with his first TAB project in 1986. He obtained TABB Certified TAB Technician Certification in 1998 and NEBB TAB Certified Professional Certification in 1999. Mr. Pittser was awarded the Golden Castle Award by the United States Army Corps of Engineers (USACE) for his work in Afghanistan from 2012-2015 completing 68 projects for the USA Department of Defense (DoD) under Combat Zone security threat and completed over 170 DoD International Projects. Pittser hold CP certification in Testing, Adjusting and Balancing of Environmental Systems, Whole Building Technical Commissioning of New Construction, Sound Measurement & Vibration Measurement, and Building Enclosure Testing and currently serves as the NEBB TAB Committee Chair.



## About This Seminar:

**Building owners and tenants are concerned that environmental performance of buildings must be optimal while operating costs should be minimal. These goals can only be accomplished when a building's HVAC and hydronic systems are properly balanced. Three major steps used to achieve the proper operation of the HVAC and hydronic systems and a desirable climate are testing, adjusting, and balancing (TAB).**

### **Formulas and Their Use**

Formulas are used daily by a TAB professional and should be memorized and applied appropriately as needed. Formulas include ratios of speed vs volume vs pressure vs BHP for air and hydronic systems. Other formulas that become necessary on occasion include V-belt length, BTUH, sensible, latent, and total heat, and others. Attendees will receive a list of commonly used formulas for their use and application.

### **Electricity**

Attendees will re-familiarize themselves with single vs three phase systems, how to measure voltage and amperage, overload protection, calculation of brake horsepower and the need for using safe practices and safety equipment for protection while gathering necessary measurements.

### **Fan Laws & Curves**

Fan affinity laws will be covered, and attendees will review how to apply known data to fan curves. Instructors will discuss individual fan systems as well as fans in series and fans in parallel.

### **Pump Laws & Curves**

Pump affinity laws and how to apply known data to pump curves will be discussed and demonstrated. Individual pumping systems as well as open systems, closed systems, pumps in series and pumps in parallel and NPSH requirements will be covered.

### **Air Systems**

Various configurations of air systems such as supply, return and exhaust systems as well as constant volume, variable volume heat recovery, induction systems, active chill beam systems, and makeup air systems will be reviewed.

### **Psychometrics**

The use of a psychrometric chart as it applies to TAB and relates to the physical properties of air and the relationship of the properties to each other will be reviewed. Attendees will spend considerable time learning to plot psychrometric charts and understand the principles.

### **Problem Solving**

TAB Professionals identify problems and determine solutions or provide necessary information for responsible parties to address and correct the problem. This involves solid logic capabilities requiring the professional to exercise a systematic approach to the identification and resolution of problems or difficulties exposed by the TAB process.

### **Engineering Fundamentals**

The course will cover basic Heat Transfer and Fluid Mechanics as they relate to TAB.

### **TAB Procedural Standards and TAB Reports**

The course will cover the requirements of the NEBB TAB PS and will address what constitutes a NEBB TAB Report.





## Monday May 27, 2024

(8 CECs)

**7:30 am:** Registration

**8:00 am - 5:00 pm:** Heat & Heat Transfer, Fluid Mechanics, and Psychometrics

*(Lunch provided)*

## Tuesday May 28, 2024

(8 CECs)

**8:00 am - 5:00 pm:** TAB Measurements, TAB Instruments, Electricity, Motors, Controls, Fans, Fan System Relationships, and Duct Systems

*(Lunch provided)*

## Wednesday May 29, 2024

(8 CECs)

**8:00 am - 5:00 pm:** TAB Reports, TAB Procedural Standards, Pumps, and Pump System Relationships

*(Lunch provided)*

## Thursday May 30, 2024

(8 CECs)

**8:00 am - 5:00 pm:** Hydronic Systems, Pipe Sizing, Safety/ARC Flash, and Other Requirements

*(Lunch provided)*

## Friday May 31, 2024

Optional Exam Day, no lunch provided

**7:30 am:** Registration

**8:00 am - 1:00 pm:** TAB CP Exam

*The scheduled activities are subject to change depending on location, instructors, and other factors.*



## Travel Information:

We recommend all attendees that are unfamiliar with the seminar location or require travel from another location review the following information prior to registering for this seminar.

### Hotels:

Attendees can make reservations directly with the hotel of their choice. There are many hotels in the area. Below is a short list of hotels near the training center. Hotel and transportation costs are not covered by the seminar registration fee.

#### Hotel Chadstone Melbourne - MGallery

1341 Dandenong Road  
3148 CHADSTONE Australia  
+61 3 9108 3333

[HB2UB@accor.com](mailto:HB2UB@accor.com)

2.5 km from the Holmesglen Institute

### Important Dates and Times:

#### Arrival in Melbourne, Australia

Sunday, May 26, 2024

If you are traveling a long distance, you may consider arriving earlier due to the time zone changes.

#### Seminar Dates:

Monday-Thursday, May 27-30, 2024

#### Optional TAB CP Paper-based Exam

Friday, May 31, 2024

#### Optional TAB CP Air and Water Practical Exam

Individual Test Dates are To Be Determined

Monday-Friday, June 3-7, 2024

### Airport:

**Melbourne Airport (MEL):** is 42 km (26 miles) from the Seminar and about a 40-minute drive.

#### Seminar Location:

**Holmesglen Institute**

**Chadstone Campus**

Corner Batesford & Warrigal Rd  
Chadstone VIC 3148, Australia



Stay up to date and join the conversation!  
Follow us on [Facebook](#) | [Twitter](#) | [LinkedIn](#)

# NEBB MAY TAB SEMINAR REGISTRATION FORM

**Registration form and payment must reach the NEBB office on or before April 15, 2024.**

Pre-registration and payment of fees are necessary to ensure your participation in the seminar.

Three ways to register:

1. Online through the [Certelligence Portal](#)
2. Email this form to [training@nebb.org](mailto:training@nebb.org), or
3. Mail this form to: NEBB, 8575 Grovemont Circle, Gaithersburg, MD 20877.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Phone/Cell: \_\_\_\_\_

Email: \_\_\_\_\_

Please list any dietary restrictions and or ADA accommodations:  
\_\_\_\_\_

## Optional Written Exam Opportunity:

Please check the box below. If interested, please email [certification@nebb.org](mailto:certification@nebb.org) for the candidacy application process. Pre-approval and payment are required before the deadline.

- Yes, interested in taking the written exam.
- No, not interested in taking the written exam.

## Seminar Fees in \$ USD (Check all that apply)

- \$2,400 Seminar Registration Fee, USD  
(Does not include candidacy application or exam fees)
- \$1,250 Air Practical Exam Registration Fee, USD  
(Does not include candidacy application or exam fees)
- \$1,250 Water Practical Exam Registration Fee, USD  
(Does not include candidacy application or exam fees)

## Publication Fees

- \$95 NEBB/ \$125 Non-NEBB: NEBB Procedural Standard (Please indicate preference: hard copy or electronic)
- \$250 NEBB/ \$300 Non-NEBB: TAB Technical Manual (Please indicate preference: hard copy or electronic)
- \$200 NEBB/ \$250 Non-NEBB: Environmental Systems Technology
- \$600 NEBB/ \$800 Non-NEBB: TAB Professional Home Study Course for CP's

*\*Prices for publications do not include shipping and handling.*

## Payment Method

- Check enclosed made payable to NEBB
- Visa  MasterCard  American Express

Name on Card \_\_\_\_\_

CC Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

Security Code \_\_\_\_\_

Signature \_\_\_\_\_

\$ \_\_\_\_\_ **Total Amount Due**

Note: Any candidacy or exam fees will be invoiced separately.

**Cancellation Policy:** Cancellation by registrants, regardless of reason, will be subject to a \$250 service charge to cover NEBB's expenses. A refund of the prepaid registration will be made less the \$250 service charge. No Shows or late cancellations (those who registered for the seminar who do not cancel at least 14 days prior to the seminar and subsequently do not attend the course) will forfeit the entire registration fee unless a replacement can be found. NEBB reserves the right to cancel any seminars having insufficient registrants, in which case, all prepaid registration fees will be refunded in full. Please advise NEBB and your hotel of your cancellation as soon as possible.



# Attendee and Seminar Requirements:



1. Verifiable practical TAB experience.
2. Minimum working capability in mathematics, including geometry and second-year high school algebra.
3. Well-versed in the application of mathematical formulas that are pertinent to TAB.
4. Possess full working knowledge of the instruments required for certification by NEBB.
5. Possess a full understanding of when, where, and how to use the instruments.
6. Attendees are required to bring the following to the seminar:
  - Straight edge
  - Hand calculator (with square, square root, cube, and cube root functions)
  - Pencils
  - Laptop/iPad to review course materials.
  - Printouts of the NEBB Formulas

## Recommended Publications:

To achieve the best learning results, it is highly recommended that attendees **read the following publications BEFORE** attending the seminar:

- Testing, Adjusting & Balancing Specifications (available for download at [www.nebb.org](http://www.nebb.org))
- 2019 Procedural Standard for TAB of Environmental Systems – 9<sup>th</sup> Edition
- TAB Technician Manual, 2021
- Environmental Systems Technology, 1999
- Instructor’s Guide to TAB Manual for Technicians (available to NEBB-certified firms only)
- Testing, Adjusting, and Balancing Study Course for CPs
- BoK approved 9/3/18, v.8

The instructor assumes that all attendees have a thorough working knowledge of the requirements of these NEBB publications prior to attending the seminar. Publications can be purchased online at [www.nebb.org](http://www.nebb.org).

## Important Reminders:

1. Registrations will be filled on a “first come-first served” basis. Please note that class sizes are limited.
  2. Seminar fees include course instruction and lunch.
  3. Seminar fees do not include anything pertaining to certification or candidacy.
  4. You don’t have to take the seminar to register for the Practical Exams but you have to be an approved candidate.
- For information on certification or exams please contact [certification@nebb.org](mailto:certification@nebb.org).

## Questions About This Seminar?

Call 301-977-3698 or email [training@nebb.org](mailto:training@nebb.org)

