Are you ready to design buildings that perform as intended in design?

"The Certified Passivhaus Designer Course was the most important course of my working life; since being qualified our business has been able to establish itself within a sector of the construction industry that strives for excellence in performance and is at the bow wave of a new building movement.

Scott Stewart"
Passivhaus is rapidly gaining momentum in Australia and APA aims to make Passivhaus the benchmark for comfort in all our buildings. Our courses are designed to specifically focus on helping professionals, trades and individuals understand more about Passivhaus.

APA has a variety of committed industry Passivhaus experts willing to train you for our certified courses, masterclasses, webinars and more.

We currently offer three courses:

Certified Passivhaus Designer/Consultant Course
In this course, you will learn to design energy-efficient and cost-optimal buildings by implementing the Passivhaus principles in your projects as well as write the Certified Passivhaus Designer/Consultant exam.

Certified Passivhaus Tradesperson Course
In this course, you will gain the foundation Passivhaus Tradesperson knowledge necessary to prepare you to tackle your first Passivhaus project, as well as write the Certified Passivhaus Tradesperson exam. A PHI Certified Passivhaus Tradesperson (CPHT) is equipped to implement the Passivhaus building standard.

Practical Selling for Passivhaus and Sustainable Building Professionals
In this course you will learn a simple, practical, non-salesy approach to selling so that you can win more clients and projects. You will learn how you can use energy efficiency and sustainability as a competitive advantage without having to constantly compete on price whilst allowing you to deliver the quality product you want for your clients without having to cut corners.

For any education related enquiries please contact education@passivhausassociation.au
Discover how to make buildings perform better than traditional construction. Develop your knowledge, and skills, related to identifying Passivhaus construction best practices.

Demand for better quality, resilient, and healthy buildings has dramatically increased in Australia, with consumers and building owners alike wanting the benefits of more sustainable structures that are energy efficient, reduced emissions, comfortable, quiet, and affordable. This course is offered in a blended format of live streamed presentations and self-paced e-learning, allowing students to manage their learning time more effectively and not be bound by strict attendance schedules.

Topics 1-8 are held as live classes, participants are expected to attend but are recorded if you cannot. The PHPP Software Course, is self paced, online with 3 months access. In the online course, participants will learn how to use the PHPP for residential building design and certification.

### COURSE OVERVIEW

**Who is this training for?**
The Designer course is for those wishing to model, design, and dive into the calculation of Passive projects. It involves theory and calculations and applying all things architecture.

**Intended Audience:** Architects, developers, self-builders and other building professionals.

**Why should they do it?**
This course is designed to prepare you for writing the Certified Passivhaus Designer/Consultant (CPHD/C) exam.

- The course has been designed to offer insights not covered by the Passivhaus Design and Construction and PHPP course, including calculations and example exam questions.
- Traditional construction has been proven ineffective and is outdated with building codes being increased across the Nation.
- The passivhaus standard has grown astronomically across the Nation and the Globe.
- Consumer education in high performance buildings is the highest it has been, with more demand to built passivhaus buildings than the market can deliver.
- Future proof your business and career by being ahead of the competition.
- Limit liability & increase credibility.
- Learn best practices & building science.

**DELIVERY MODE:** Online Self-paced

**NUMBER OF UNITS:** 8
### LEARNING OUTCOME

**UNIT 1: Building Envelope**

Understanding of the principle of thermal envelopes, including a good perception of the heat insulation qualities required for a Passivhaus in terms of both the insulation thickness and quality and the prevention of thermal bridges as well as the relationship between extensive and complex thermal envelopes and the respective building costs.

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**UNIT 2: Airtightness**

Learn all facets of airtightness in passivhaus such as:

- Suitable lightweight and solid structures in terms of airtightness such as:
- Suitable airtight joints for lightweight, solid and mixed constructions;
- Air sealing solutions in case of leakages at intersections;
- Potential weak spots;
- The significance of the planning task “airtightness”;
- Test procedures (airtightness test) and requirements;
- Basic leakages (e.g. holes from nails, power sockets, window connection joints, unrendered exterior wall surfaces, loose foil, unsealed openings, unsealed downpipes);
- Permanent solutions for fixing simple leakages;
- How to assess difficult leakages (e.g. timber floor); and,
- How problematic leakages can be avoided

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**UNIT 3: Thermal Bridging**

Gain an understanding of the principle of thermal envelopes, including a good perception of the heat insulation qualities required for a Passivhaus in terms of both the insulation thickness and quality and the prevention of thermal bridges as well as the relationship between extensive and complex thermal envelopes and the respective building costs

- Understand the link between U-values and internal surface temperatures
- Gain familiarity with typical U-values of opaque building structures for passivhaus in cool temperate climates
- Learn about the typical lightweight and solid structures suitable for passivhaus houses in cool temperate climates
- Be aquatinted with thermal bridge coefficients (exterior and interior dimensions) and qualitative analyses of building envelopes in terms of potential thermal bridges
- Understand the principle of thermal bridge free construction
- Quantitative evaluation of basic thermal bridges
- Gain knowledge of suitable insulating materials and their main characteristics
<table>
<thead>
<tr>
<th>TOPIC</th>
<th>LEARNING OUTCOME</th>
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<tbody>
<tr>
<td><strong>UNIT 4:</strong> Windows</td>
<td>&gt; Acquaintance with Ug, Uf, and Ψg values and the installation-based thermal bridge coefficient (Ψmount)</td>
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<td>&gt; Difference between “Certified Passivhaus windows” and “approved [window] connection details”</td>
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<td>&gt; Understanding of the thermal quality parameters for curtain wall systems:</td>
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<td>&gt; Understanding of the comfort criterion (interior surface temperature of Passivhaus suitable windows)</td>
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<td>&gt; Estimation and determination of frame ratios</td>
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<td>&gt; Understanding of triple low-e glazing systems and knowledge of the main heat transfer mechanisms in windows such as heat conduction through the filling gas, radiation of heat and low-e coating, convection</td>
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<td>&gt; Understanding of the design and purpose of a window’s glass edge system</td>
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<td>&gt; Why is a thermally optimised glass edge system (warm-edge) important</td>
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<td>&gt; What solutions are there for reducing the thermal bridge coefficient at the edge of the glazing such as warm-edge, deep glazing rebate</td>
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<td>&gt; What properties are required for a Passivhaus window</td>
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<td>&gt; Acquaintance with the PHPP window sheet</td>
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<td><strong>Unit 5:</strong> Ventilation</td>
<td>&gt; Knowledge of the most important air contaminants in buildings</td>
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<td>&gt; Knowledge of the CO2 criterion</td>
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<td>&gt; Determination of fresh air flow rates for adequate ventilation</td>
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<td>&gt; Relationship between the relative indoor air humidity and sources of humidity inside the building, the rate of fresh air supply and the external temperature</td>
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<td>&gt; Why does the air flow need to be limited even during winter  \What can be done when higher ventilation rates are required for other urgent reasons</td>
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<td>&gt; Understanding of driving forces of natural (non-mechanical) ventilation</td>
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<td>&gt; Knowledge of types of natural ventilation: joints and cracks, tilted windows, open windows</td>
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<td>&gt; Understanding of factors that will influence natural ventilation effects; typical air change rates</td>
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<td>&gt; Why is non-mechanical ventilation not suitable for Passivhaus located in regions with a considerable amount of heating degree days</td>
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<td><strong>UNIT 6:</strong> Heating, DHW &amp; Cooling</td>
<td>Knowledge of the g-value definition according to EN 410, g-values expressed to two significant figures</td>
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<td>&gt; Knowledge of typical values for different types of glazing</td>
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<td>&gt; What other factors reduce the solar energy gain such as angle of incidence, dirt, frame ratio, shading, reflection</td>
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<td>&gt; Knowledge of the energy criterion for glazing (Ug - 1.6 W/(m2K) · g ≤ 0) and its application;</td>
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<td>&gt; Knowledge of the influence of a building’s orientation on the solar energy supply</td>
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<td>&gt; Knowledge of typical self-shading effects of buildings on their solar energy supply</td>
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<td>&gt; Acquaintance with the PHPP shading sheet</td>
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<td>&gt; Knowledge of the heating load criterion; what is the difference between “heating load” and “space heating demand”</td>
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<td>&gt; Knowledge of the thermal comfort requirements [ISO 7730]</td>
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<td>&gt; Knowledge of typical heating loads</td>
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<td>&gt; Knowledge of typical heat distribution systems suitable for Passivhaus</td>
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<td>&gt; Ability to sketch a heat distribution system in the floor plan of a Passivhaus</td>
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<td>&gt; How does the PHPP deal with heating loads</td>
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<td>&gt; What factors need to be taken into consideration when designing the heat distribution system and the central heat generator and how the total heating load must be accounted for</td>
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<td>&gt; How and to what extent can temperature differences be achieved within a Passivhaus</td>
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<td>&gt; Knowledge of the limitations of supply air heat distribution systems (disconnected rooms, extract rooms); solutions for these cases</td>
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### UNIT 7: Construction Systems and Quality Assurance

- Initial instructions for craftsmen
- Materials and services to be inspected and quality assurance methods:
  - Airtightness of surfaces and connection details/intersections
  - Thermal bridge free design, avoiding penetrations that do not figure in the plans
  - Window installation; frame and glazing qualities
  - Thermal insulation, thermal conductivity of insulation materials, elimination of joints, application without air gaps.
  - Air ducts: no leakages, layout / dimensions in accordance with plans, insulation, prevention of condensation and protection against construction dirt, antistatic
  - Ventilation unit: installation according to plans, flow rate check /adjustment
  - Space heating system: installation according to plans, complete insulation of heated pipes (including fixtures, pumps, etc.), running times of pumps, test run o Hot water system: installation according to plans, complete insulation of heated pipes (including fixtures, pumps, etc.), running times of pumps, test run
- Required quality assurance procedures (pressure test [appropriate timing], specific dates for the quality assurance for the window installation, airtight layer, insulation, air ducts, inspection of the ventilation unit)
- Handing over the building at an appropriate interior temperature such as warm in winter and cool in summer periods

### UNIT 8: Basics of economic efficiency calculation

- Payback period, present value method, annuity method application of the annuity method to simple examples
- Correct determination of excess investment
- Life cycle assessment
- Cost-effective insulation levels
- Advantages of calculating the price of each kilowatt hour saved independently of energy prices

### UNIT 9: Exam preparation

- Familiarity with the metric system and decimal units.
- Acquaintance with standard symbols, quantities and units, in particular the consistent use of units throughout the calculation process for the purpose of self-monitoring
- Making a clear distinction between different physical quantities such as work and power, or temperature and heat etc

### UNIT 10: Exam

- The exam is based on the following learning targets and includes multiple choice questions, construction details drawings, calculations, as well as a Passivhaus design exercise

### UNIT 11: Online PHPP Software Course (Self Paced)

- Learn the structure, inputs, and outputs of PHPP software
- Select and input appropriate climate data sets in PHPP
- Measure and record building characteristics (areas, volumes, etc)
- Specify building assemblies and components
- Model HVAC systems
- Assess building heat loss, energy demand and summertime overheating risk
- Understand proper sourcing of performance data
- Gain practical experience in completing a PHPP assessment for a residential development
WALTER VAN DE LINDE
Walter is a Chartered Professional Mechanical Engineer, Registered Building Practitioner, and a Certified Passivhaus Consultant. He has experience in the design of high-performing HVAC systems and understands the important role they play in providing high indoor air quality and operating at energy-efficient levels to reduce energy consumption. Walter has designed all-electric net zero carbon buildings and is familiar with the key design requirements to successfully achieve energy targets and switch to all-electric buildings.

KYLIE MILLS
Kylie is passionate about advocating for sustainability, designing buildings and educating others, she is a registered architect, director of BluKube Architecture and certified passive house designer. In 2022, Kylie achieved a ‘Smart Building Ideas – Innovation Award’ by Architecture & Designs Sustainability Awards for a Certified Classic Passive House she designed in the Northern Rivers of NSW. In addition, she tutors at Sydney University, by sharing knowledge, she believes it is one of the ways in which using building science will make a positive difference in the built environment through younger generations of architects. Free time is enjoyed with her family and two young energetic mini foxies Theodore & Gustav.

MARCUS STRANG
Marcus Strang is a specialist sustainability engineer and experienced Certified Passivhaus Designer, having had the opportunity to work on many Certified Passivhaus buildings in Australia. His expertise is in refining building energy performance, analysing thermal envelope junctions and fenestration details, as well as identifying interstitial and surface moisture risks using hygrothermal modelling tools. Marcus’s interests encompass holistic systems design, building physics, passive design optimisation and natural building materials. Currently, also a PhD Candidate specialising in the Passivhaus Standard and mass timber design, which he sees as a fundamental step for striving towards net-zero carbon emission buildings and a thriving, vibrant society.

MATTHEW FRANCIS.
Matthew has 23+ years in the property, planning and construction industry include experience at all levels from contracting and design management to policy and client representation but is now focused on researching user perspectives from occupying high-performance buildings. Matthew is specifically focused on university workplace design and how perceptions of space differ between academics and professionals. He also research’s sustainable housing design, development and construction. Matthew is an advocate for greater adoption of rigorous and proven measures to reduce carbon emissions in the property industry without sacrificing occupant wellbeing. Unsurprisingly, I am a certified Passivhaus building designer. Matthew presently sits on the national standards committee for Indoor Air Quality committee at Standards Australia contributing to new and exciting national air quality standards in Australia. He is also a member of the international research advisory group for the WELL building standard, and is involved in the Tertiary Education Facility Management Association (TEFMA) as a contributing committee member. Fortunate to his work in many countries, Matthew’s cross-cultural experiences in combination with his strong understanding of the design, construction and user-centred operation of built environments now help inform the courses he leads and the research he conducts.
“I enjoyed the way the course was presented and how the content was taught. The presenters did a great job engaging us with the material and preparing us for the exam.”
Sarah Fiess, Architect/Team Leader at Sustainability Victoria

“The course thoroughly explained the Passive House standard as an elegant and robust interpretation of fundamental building physics principles. I enjoyed the course and recommend it to anyone interested in design science.”
Daniel Londono, Architect/Senior Associate at Architecture BVN

“I would highly recommend this course to anyone who wants to upskill and understand Passive House design principles. At the beginning, I was hesitant with online classes, but the instructors prove me wrong. They are professional and deliver a clear online presentation.”
Han Chua, Architectural Design Lead at ClarkeHopkinsClarke Architects

PRICING

MEMBER FEE
Designer Course including PHPP  $3325
E-Learning Module & PHPP Software  
Exam Preparation  $380
Exam  $712.50

NON-MEMBER FEE
Designer Course including PHPP  $3500
e-learning module  
Exam Preparation  $400
Exam  $750

WHO RELIES ON OUR TRAINING

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