



Bringing together technology and design methods to provide the information needed to create healthy homes and workplaces



Professional Certification, Building Biology® New-build Consultant (BBNC):

A Building Biology New-build Consultant (BBNC) is trained in the art and science of renovation and newly built environments that nurture human health while contributing to ecological balance. This requires a holistic approach to designing, building, remodeling, and furnishing healthy homes and workplaces while always maintaining the building's occupants as its core focus. It also applies to the designing and planning on a community and urban scale. This approach holds Nature as the gold standard for a healthy human environment, and strives to introduce and apply, house by house, building by building, indoor environments that are compatible with, and respectful of the laws of nature; and are thereby symbiotic with the vital holistic relationship of all life.

IBE is a registered provider of Continuing Education Units (AIA, ACAC, InterNACHI). The undertaking and successful completion of this professional certification program will convey 235 CEUs. Registrants are required to complete this program within two years of enrolling. Extensions of this deadline must be requested in writing at any point during their second year of study.

Requirements for Certification (an overview):

1. IBE 101 Natural Healthy Buildings (our mentored correspondence course).*
2. Sign the IBE ethics statement (included with your IBE 101 course materials).
3. Attend one 5-day seminar (IBE 213), two 4-day seminars (IBE 214 and IBE 215), and complete each seminar's proctored written on-site exam successfully.*
4. Successfully complete the BBNC Final Project.*

****IBE 101 and our three seminars (IBE 213, IBE 214, IBE 215) are designed to be taken in any order. They must be completed successfully before undertaking BBNC Final Project.***

Requirements for Certification (specifications for each module):

IBE 101, Natural Healthy Buildings:

Topics covered include Building-Biology and the Building Culture; the Environmental Situation; Biologically-Sound Building Materials; Construction and Building Methods; Heating and Thermal Insulation; Water and Water Pollutants; Air and Air Pollutants; and Electro-Climate Issues. This is a mentored, self-study course that can be completed within the 2-year limit, as permitted by the student's convenience.

- IBE Code of Ethics (signature required)
- Course manual
- Study Progress Sheet
- Standard of Building Biology Testing Methods
- An introductory-level Gaussmeter
- Water-safe testing kit
- Radon test kit
- Additional reading: *7 Steps to Improving Air Quality, Creating a Sleeping Sanctuary, Prescriptions for a Healthy House*, by Paula Baker-Laporte, et al

Seminars: IBE 213, IBE 214, IBE 215

IBE seminar instructors and guest lecturers for this program are accomplished indoor environmental experts, with extensive design and/or construction field experience. The

instructor's bios, can be found among the seminar pages of the IBE website, available for download. The syllabus for each seminar can also be found on the seminar pages of the IBE website, available for download.

IBE 213: Building Physics/Building Biology

(understanding the physics of building):

- Introduction to the physical forces that act upon buildings and the ramifications that these forces have on the longevity of those buildings and the health of their occupants.
- Both conventional construction and Building Biology favored alternative construction is examined in light of Building Physics.
- For each phase of construction best practice for conventional construction and alternative materials and protocols that safeguard occupant health are presented.

This 5-day seminar is a combined requirement for BBNC, BBEC, and EMRS candidates and includes the following topics:

Thermal Properties (Fire)

- The physics of heat transfer: Conduction, Convection, Radiation
- Controlling the flow of heat: Thermal mass and Thermal Insulation
- Conventional mechanical HVAC/ Best and worst practice. What goes wrong and why
- Building Biology HVAC: Using radiant heat, thermal mass, thermal insulation and working with nature to control heat transfer.
- Types of heating systems

Air

- The driving forces of air movement on buildings: stack effect, wind effect, mechanical equipment effect
- How these forces cause building failure thermal discomfort and moisture
- Understanding the difference between vapor barriers and air barriers
- Vapor barriers vs. flow through wall systems
- Passive vs. active strategies

Moisture (Water)

- The physics of moisture movement through buildings. Permeance, Capillary Movement, Rising Damp, Vapor Pressure
- Weather interacting with building from outside ie. moisture intrusion, water intrusion protection
- Effect of Occupants on moisture levels.
- Understanding Relative Humidity
- Conventional approach vs Building Biology approach: preventing the flow of moisture vs building in a natural system of moisture resilience: diffusion, sorption, hygroscopicity, hygric buffering capacity

Ecological Impact of Building Materials/systems:

- How building biology principles with attention to diffusion hygroscopicity embodied energy, historic analysis, etc. can have a positive effect on both the ecological footprint and life cycle health consequences of our building choices.

Flow-through (vapor open) wall systems

- Best practice for conventional North, South, flow through
- Synergies of combining thermal mass and insulation
- Environmental impact/embodied energy of building products
- The theory and the proven history
- Some examples of flow through wall systems

Foundation Systems, Crawl Spaces, Basements

- Earth coupling
- Flooring systems
- Water proofing below grade (good boots)
- Alternative foundation systems
- Crawl spaces and basements, conditioned and unconditioned avoiding moisture problems

Roof Systems and attics

- Analyzing roof systems
- The attic, conditioned unconditioned avoiding moisture problems
- Proper ventilation strategies based on roof type and climate

Interior Floor and Wall Systems

- Interior wall systems: options, IAQ issues, best practice
- Introducing mass walls on the interior
- Floor system options: IAQ issues, best practice

Ecological alternative systems for heating, cooling (fire, and air)

- Biological Ideals for Heating

Water Systems (water)

- Plumbing alternatives for ecology and health, rainwater, grey water etc.
- Preventing moisture damage
- Water quality for designers and builders

Student evaluation would be based on daily quizzes and class participation (20%) and a proctored final exam (80%) on the closing afternoon of classes.

IBE 214: EMR* & IAQ* for Architects and Builders

*Electromagnetic Radiation & *Indoor Air Quality

This 4-day seminar condenses and combines the current IBE 211 (IAQ) and IBE 212 (EMR) seminars. It contains the practical information that design and building professionals require for new construction and renovations in order to assure that their clients receive optimal healthy environments. The information is also relevant for anyone interested in creating their own healthy spaces with a solid understanding of both air quality and electromagnetics. Topics are as follows:

EMR understanding and installations for new construction and renovation

- What is EMF/EMR and how does it work?
- How does it impact occupants?

- How is it measured?
- Discussion of both High and Low Frequencies
- Discussion of DC magnetic fields
- Exploration of DC electric fields and renewable energy systems
- Indoor electro-climate
- New construction design and installation for EMF
- When to measure what and how.
- Low and High Frequencies strategies for shielding, wiring runs, grounding, earthing, etc.
- How to specify safe wiring
- When professional testing is needed
- How to future proof

IAQ understanding and improvements for new construction and renovation

- What is IAQ/IEQ?
- What are the health concerns?
- Basics of moisture in air, materials, temperature of surfaces, and other components of comfort
- How is it measured?
- Discussion of some chemicals of concern
- Discussion of the biologicals of concern
- Discussion of particulates of concerns
- Discussion of the radioactive elements of concern

Lighting and Color for Health

- Daylighting, understanding health concerns, efficiencies, and strategies
- Electrical lighting choices and implementation
- Natural vs synthetic color, texture and health impactors

Acoustics

- Definitions
- Physiological effects of noise
- Impact, airborne and vibrational types of noise transfer and how they are measured
- Sound attenuation strategies for all types of noise transfer

Student evaluation would be based on daily quizzes and class participation (20%) and a proctored final exam (80%) on the closing afternoon of classes.

IBE 215: Design for Health

This 4-day seminar focusses on a broad spectrum of Building Biology design principles and applications for design and building professionals. It is also a beneficial course of study for homeowners with a special interest in creating healthy environments for their family. From family residence to community design, we will explore the Building Biology principles and criteria and their application to modern day North American built environments.

Site Selection: The first step to creating a healthy building is choosing a healthy site. We will study:

- Ancient traditions

- Building Biology parameters for site evaluation: Geopathic Stress, EMR and surrounding installations, existing pollution sources air, water, ground, future potential sources.

Community Design

Healthy homes and workplaces belong in healthy communities. We will explore many aspects of community design and learn from historic successes and failures as seen from a Building Biology perspective. We will take a field trip to The Commons on the Alameda. Founded in 1992 The Commons is one of the oldest and most successful co-housing communities in North America.

- Historic Context from the birth of the City to present day communities and cities.
- Building Biology principles of Community Design
- Case studies highlighting historic and modern day applications of the recommended best practices.

Design for climate

In North America we have several distinct climate zones and each one has a unique design approach for achieving maximum health and energy efficiency while minimalizing fossil fuel consumption. Students will learn strategies for optimizing passive design in each.

- Climate zones of North America
- Indigenous responses to climate
- Conventional construction , best practice, code challenges
- Integrated design for passive climate controls, a Building Biology approach

Building Product Evaluation

Industry has responded to a growing awareness of consumers and their demands for healthy and green. But which products are truly healthy and which ones are just green-washing? In many ways making the right choices can be even more confusing now! This section will teach Building Biologists how to sort through available information to make the best choices for health.

- Our exposure to harmful chemicals in construction: the status quo
- Identification of chemicals used in construction products
- Using current and emerging evaluation tools and data banks.
- A comparative study of various systems including Cradle to Cradle, Pharos, Declare etc.

Interior Furnishings and Finishes

Building Biology has always put great emphasis on the furnishings and finishes because these are the things that will have the greatest day-to-day impact on occupant health. The Building Biology criteria for creating good “indoor climate” is unique and goes well beyond simply “non-toxic” to create environments that deeply nurture.

- Building Biology criteria for finishes
- Room by room health concerns and healthy materials selection
- Furniture sourcing and selection

Renovation

What if you or your client is not in a position to build from scratch using all of the Building Biology criteria? In truth the vast majority of building activity for most people involves renovating an existing environment. Whether one is renovating to correct building problems or get relief from chronic health issues or simply to upgrade the quality of their surroundings health should be the number one priority. It is often complex to weigh the many decisions and each project is unique. We will discuss a systematic approach to optimizing existing environments.

- Prioritizing for health.

Student evaluation would be based on daily quizzes and class participation (20%) and a proctored final exam (80%) on the closing afternoon of classes.

Final Project: BBNC Professional Certification

- A mentored “thesis” based on new construction or renovation must be submitted and mentor-approved to finalize certification.
- Project can be a real time project that the candidate is working on or a theoretical design.

Please refer to the BBNC Final Project document for further information.

Building Biology® is a registered trademark of to the International Institute for Building-Biology® & Ecology, a 501(c)(3) non-profit environmental education organization.