2015 CURRICULUM

Join us in spreading global awareness about the vital interrelationships between human health, built environments and planetary ecology. Our mentored correspondence course, compendium of seminars, professional certification tracks and online courses are a robust program, grounded in solid science.
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<td>M. Spark Burmaster (ELECTRICAL ENGINEER)</td>
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Seminar Synopsis

The focus of this seminar is on making indoor spaces healthier. The viewpoint is holistic—we are concerned with the well-being on all levels of the people who occupy the building. Emphasis is placed on how to identify problems, what their health impacts may be, and how to take effective action. Common indoor conditions may cause or exacerbate allergies, immune system suppression, fatigue, nervous system complaints, autoimmune and chronic diseases and many other conditions.

Topics Include

• Indoor climate parameters (temperature, humidity, ventilation, particulates...)
• Air and water flow, in and around buildings (drainage, pressure differentials)
• Conventional mechanical systems (heating, air conditioning, ventilation, filtration, plumbing)
• Indoor and outdoor air and water contaminants (combustion gases and by-products, lead, asbestos, metals, mold, allergens, VOCs, pesticides, radon, formaldehyde, flame retardants, methane...)
• Alternatives to conventional products, cleaners, pesticides

Resources
On-line module Indoor Climate

Time Requirement
5 days (successful completion of a written exam is required for BBEC status)

Prerequisite Online Courses: IBE 204.2 Indoor Climate, IBE 206.6 Ventilation
**Seminar Objectives** Upon completion of this seminar, the students will be able to improve indoor environmental health by:

1. Understand the environmental factors that affect health: Indoor climate parameters (temperature, humidity, ventilation...); Driving forces of air movement (pressure differentials, etc.); Combustion gases and combustion by-products (propane, natural gas, carbon monoxide, PAH); Outdoor factors (air, water, industry, neighborhood, traffic); Conventional heating, air conditioning, ventilation, filtration; Dust and particulates (lead, asbestos, metals); Soil gases (radon, methane...); Drinking water pollution sources, disinfection, filtration, and waste water systems; Fundamental interactions of moisture and the built environment (water intrusion and humidity issues); Biological contaminants (mold, bacteria, viruses, dust mites, allergens...); Volatile and semi-volatile organic compounds, formaldehyde, cleaners and pesticides; Evaluate materials, products, cleaners, pesticides to determine the least toxic alternatives.

2. Understand how to quantify the health of indoor environments: IBE Principles, and Guidelines for sleeping areas; Be familiar with pertinent Acts, regulations, standards, and industry best practices; Understand the limitations of testing and quantifying conditions.

3. Gain practical experience at: Improving observational skills; Instrument usage; Interpretation of various laboratory and other agency reports; Thinking about alternatives and common sense solutions to creating healthier spaces.

4. Understand general issues pertinent to Building Biology Environmental Consultant (BBEC): Safety and Personal Protective Equipment; Information resources for further education and further certification.

This seminar is held annually in April/May. If you will be attending in pursuit of IBE professional certification, or to earn 40 continuing education credits, successful completion of a written exam will be required.

To learn more about this seminar, go to [http://hbelc.org/seminars/indoor](http://hbelc.org/seminars/indoor)
Seminar Synopsis

This seminar provides techniques for identification, detection and mitigation of electromagnetic radiation (EMR); the theory of EMR is demonstrated with practical examples and case studies based on actual home inspections. Particular emphasis is placed on the bedroom as well as EMR that may enter the house via the public water supply system. The proper instruments used in the detection procedure are demonstrated, abatement techniques are explained and one can also learn how to discuss these techniques with clients, electricians and plumbers. This seminar includes lectures, hands-on labs for instrumentation usage, demonstrations and interactive discussions.

Topics Include
- Fundamental definitions of energy and how electricity is a special class of energy
- Concepts of AC electric and AC magnetic fields
- EMF low and high frequency ranges including radio frequency and cellular phone
- Definition of AC electric and magnetic fields and DC electric and magnetic fields
- Ionizing radiation
- Static electric and magnetic fields

Prerequisite Course
On-line module Indoor Climate

Time Requirement
Five days (successful completion of a proctored written exam is required)
**Seminar Objectives**

1. Understand the factors that affect the indoor electro-climate environment: Static Electric Fields; Static Magnetic Fields; AC Electric Fields; AC Magnetic Fields; Radio (Communication) Frequency Fields; Radiation and Radioactivity.

2. Learn the IBE protocols and standards used to investigate electro-climate environmental factors affecting health: IBE protocols; Instrumentation usage; Data analysis and solution mitigation.

3. Learn how to control or avoid these factors to improve the health supporting nature of the built environment (basic mitigation techniques only): Biologically effective: client responds positively; Technically sound: available, sustainable, and effective; Aesthetically acceptable: affordable, family acceptable, sustainable.

4. Understand general issues pertinent to Building Biology Environmental Consultancy: information; resources; developing resources; basic equipment specifications and recommendations; building code awareness.

5. Understand how to educate clients of the processes to create a safer home.

This seminar is held annually in August/September. If you will be attending in pursuit of IBE professional certification, or to earn 40 continuing education credits, successful completion of a written exam will be required.

To learn more about this seminar, go to [http://hbelc.org/seminars/electro](http://hbelc.org/seminars/electro)
Seminar Synopsis

Building-Biology®, or Bau-biologie®, is a specialized branch of Building Science with human health as its central focus. This 5-day seminar explores building physics, the interaction between air, moisture, toxins and humans within a built environment, and the uniquely holistic Building Biology approach to the built world. Students will learn to apply Building Biology criteria to evaluate building envelopes, and explore a number of alternative systems available in North America. Additionally, students will learn about healthy design strategies for passive heating/cooling, mechanical/electrical systems, and evaluate materials and finishes for their health impact.

Topics Include

- Environmental situation
- Bau-biologie® Principles and conventional building practices
- Building Physics (Science)
- Biologically-sound building materials and strategies
- Construction and building methods and systems
- Designing for healthy passive climate control (heating, cooling, balance of thermal and insulation performance/opportunities)
- Examples of Bau-biologie® Principles applied to building design of communities and individual homes

Prerequisite Courses
IBE 203.4 Community Planning, IBE 204.2 Building Science, IBE 205.5 Natural Finishes

Time Requirement
Five days (successful completion of a proctored written exam is required)
Seminar Objectives

1. Gain insight into the dynamic interaction between the climate, the built environment, and the impact of that built environment upon the occupant and the ecosystem (climate effects, building science and Building Biology responses, building envelopes, building systems, building materials and furnishings.

2. Understand building science as it applies to conventional construction as practiced in North American home building.

3. Learn the IBE principles used to build/remodel a biological and ecological home.

4. Learn biologically effective methods for improving the health supporting nature of the built environment.

This seminar is held annually in February/March. If you will be attending in pursuit of IBE professional certification, or to earn 40 continuing education credits, successful completion of a written exam will be required.

To learn more about this seminar, go to http://hbelc.org/seminars/natural
Seminar Synopsis

This seminar is intended for practicing Building Biologists, Air Quality Professionals, Mold Inspectors, and field professionals or homeowners who wish to enhance their current knowledge of and experience with field testing for mold, VOC’s, and common problem gases.

Topics Include

• Particle Counters, PID instruments, air sampling devices & pumps
• Mold Testing: Cultures, ERMI, HERTSMI 2, Mycotoxins, PCR, Microbial VOC’s
• Issues with HRV’s & ERV’s, A-Coil, Humidifiers
• Fiberglass particles, cellulose leakage
• Mold Remediation—Traditional Methods vs. Experimental Methods
• Mold Remediation—Particle Leakage of Equipment
• Post Remediation Verification Testing Standards
• Mycotoxin Remediation
• Worldwide Exposure Limits and California Recommendations
• Report Writing – Audience, litigation, liability, photos, documentation

Prerequisite Courses

None

Time Requirement

Five days
Seminar Objectives

1. A thorough grasp of air quality investigating and testing in residential and commercial settings.

2. An examination of various instruments (explained, demonstrated, reviewed).

3. Understanding current state of the art lab testing, with emphasis on interpretation of lab result and remediation protocols.

4. Tips and protocols for odor investigation, water heaters and back-drafting.

5. An exploration of formaldehyde (Standard versus CARB2) and VOC testing and interpretation.

6. Learning protocols for wall cavity testing.

7. Learning dust analysis versus dust characterization.

This seminar is held biennially in November (2015, 2017, 2019, etc.). If you will be attending to earn 40 continuing education credits, successful completion of a written exam will be required.

To learn more about this seminar, go to: http://hbelc.org/seminars/buildingsscience
Seminar Synopsis

This IBE 312 advanced seminar amplifies the measurement and remediation techniques information learned in IBE 212. The seminar will include more detailed information on power system magnetic and electric fields, power system VLF fields and radio frequency radiation. The seminar will more fully explore remediation techniques and materials along with remediation planning, costing and installation. Along with use of basic instrumentation to assess environments for EMR, advanced measurement techniques and instrumentation will be introduced. The IBE Protocol for Measurement of Non-ionizing EMR in Low Rise Residential Buildings will be introduced and used throughout the seminar to guide measurement techniques.

Although there will be lectures to introduce new concepts and instrumentation, this seminar will be heavily devoted to lab work. In a team setting, basic and advanced equipment will be used by attendees to assess realistic environments and models constructed to produce typical problems found in buildings. Team members will discuss findings and produce remediation plans to be shared with the other teams during debriefing sessions.

Enrollment is open only to students who have successfully completed IBE 212, Electromagnetics (exceptions will be made for candidates with professional real-world experience). Participants are required to review the course work for IBE 212 as this basic material will not be reviewed and it assumes that participants know this information and are totally familiar and are able to make measurements with the basic instrumentation used in IBE 212.

Prerequisite Course
IBE 212 and purchase/read Tracing EMFs In Building Wiring And Grounding by Karl Riley

Time Requirement 5 Days
Seminar Objectives

1. Understand complexities of measuring EMR in low rise buildings including power system ELF magnetic and electric fields, power system VLF electric fields and radio frequency radiation.

2. Understand/use specific meters to measure specific EMRs; learn how meters can be used to measure and map EMR in buildings; learn about data logging and its uses in the assessment.


4. Learn about various methods of shield/blocking EMR and the application criteria for each type of shielding.

5. Learn how to construct and cost a remediation plan for each of these energies.

Please note that IBE 212 must be completed successfully before enrolling in IBE 312. Participants are required to review the course work for IBE 212 as this basic material will not be reviewed and it assumes that participants know this information and are totally familiar and are able to make measurements with the basic instrumentation use in IBE 212.

This seminar is held biennially in December (2014, 2016, 2018, etc.). If you will be attending to earn 40 continuing education credits, successful completion of a written exam will be required.

To learn more about this seminar, go to [http://hbelc.org/seminars/advelectro](http://hbelc.org/seminars/advelectro)
Natural Healthy Buildings: **IBE 101**

**Mentored Correspondence Course**

Natural Healthy Buildings (NHB) is self-study and introduces the Principles of Bau-Biologie®. Students will learn what kinds of hazards a house or office may contain, how to detect them, what to do about them, and best of all how not to cause them. This course benefits home dwellers, as well as architects, interior designers and other building professionals. Topics include environmental site situation, Bau-Biologie and building culture, biologically-sound building materials, construction and building methods, heating and thermal insulation, water and water pollutants, air and air pollutants, and electro-climate issues.

**Topics Include**

- Bau-Biologie & Ecology
- The Breathing House
- Indoor Air Quality
- Indoor Water Quality
- Matter: Products and Materials
- Energy: Electromagnetic Climate
- Remedies and Solutions
When you enroll, we will ship the following materials to you:
A printable textbook on CD, a Gauss meter, a Radon Test Kit, and a Water Test Kit (all of which this course will teach you to properly use), as well as two books that are required reading: *Prescriptions for a Healthy House* by Paula Baker-Laporte, Erika Elliott, John Banta and Lisa Flynn, and *Homes that Heal* by Athena Thompson.

Upon completion of this Natural Healthy Buildings course, you will be better able to
- Understand environmental issues in layperson’s terms.
- Know what current options are in this developing field.
- Make informed decisions on healthful products.
- Learn the basics of selecting/building a healthy house.

Jeanne McLaughlin, BBEC, and her team coordinate the real-time mentoring program for IBE 101 students. Available to you daily throughout your studies, via dedicated phone line or e-mail, they stand ready to assist you in learning how to detect and prevent the many environmental hazards found in homes, offices, schools, and commercial buildings. And they will guide you through, as well as evaluate and grade, your Final Written Report.

This course, studied at your own convenience, takes the average part-time student approximately two months to complete (although students have completed it successfully in as little as ten days).

To enroll in this course online, go to [http://hbelc.org/courses/ibe101](http://hbelc.org/courses/ibe101)
Online Courses

- Electromagnetics & Indoor Air Quality
- Building Biology & Ecological Design
- Living Environment & Building Physics
- Building Materials & Structural Components
Online Course

Explore the distortions and lies perpetuated by the telecommunication industry, understand the truth about the effects of cellphones on human health, and learn to adopt the easy methods and practices that minimize your risks without abandoning your phones. The indispensable nature of cellphones in our everyday lives makes this course an imperative for every consumer, especially the parents of toddlers and school-age children.

Cellphones, and smartphones in particular, along with their cousins Wi-Fi and cordless home phones, are well documented as presenting significant hazards to human health, and as contributing factors to Sick Building Syndrome (also known as Sick House Syndrome). In May 2011, the World Health Organization (WHO) categorized cell phone radiation as a “possible carcinogenic hazard.” This is a label the WHO also placed on lead, engine exhaust, and chloroform. The WHO issued a further statement that this new warning is “based on an increased risk for glioma, a malignant type of brain cancer, associated with wireless phone use.”

A must for consumers who are confused by the myriad of conflicting reports, as well as for professionals wanting to bring their knowledge base up to date, this course is a comprehensive evaluation of the risks to human health posed by cellphones and microwave towers. It covers network growth versus health impacts, EMR basics, radiofrequency (RF), thermal effects, non-thermal effects, and most importantly, actions you can take to protect yourself and family.

Successful completion of this course conveys 15 Continuing Education Credits (CEUs), and/or 15 credit hours toward IBE certification. It is comprised of eleven lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=237
Online Course

“Sensitivity to electromagnetic radiation is the emerging health problem of the 21st century. It is imperative that health practitioners, governments, schools and parents learn more about it. The human health stakes are significant.” William Rea, MD, Founder & Director of the Environmental Health Center, Dallas and Past President, American Academy of Environmental Medicine.

Explore electromagnetic emissions (also known as electrosmog) inside homes and offices, and examine techniques for identifying sources and measuring exposure. Power lines, cellular phones, Wi-Fi, and microwave ovens are all examples of external manmade sources of EMEs that potentially interfere with and disrupt our inner biological processes. This comprehensive course covers testing protocols, health effects, and remediation in multiple areas of study, including static electromagnetic fields, AC electromagnetic fields, radio frequency, radioactivity & radon, and terrestrial radiation.

Successful completion of this course conveys 30 Continuing Education Credits (CEUs), and/or 30 credit hours toward IBE certification. It is comprised of thirty-three lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
Online Course

We can send e-mail in an instant, call someone on a cell phone from virtually anywhere, or heat up dinner in a few minutes with a microwave oven. While we’ve grown accustomed to and dependent on modern technology, we are only beginning to grasp the effects of electromagnetic radiation on biological processes. This course will examine the methods and procedures for remediating and/or eliminating electromagnetic radiation in homes and offices. Topics covered include design criteria for minimizing electromagnetic emissions (EMEs, EMF), shielding EMEs, technical house systems, power distribution, grounding issues, circuit layouts, types of cables used, and home appliance issues. Also discussed are electric heating systems, home automation, dimmer switches, branch layout, etc.

Taken in concert with IBE 204.3, ElectroMagnetics, which we highly recommend, this course provides a broad foundational understanding of EME, its complications and solutions.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of 12 lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=70
Online Course

We inhale about 20,000 liters of air each day. Unfortunately, countless chemicals are often along for the ride, reducing immunity and causing chronic and life-threatening illnesses. A particularly troubling example is a recent study by the Environmental Working Group (EWG), which found that “the typical variety of cleaning products used in schools released 457 different chemicals into the air.”

This course discusses the requirements for fresh air, and how to reduce or eliminate pollutants when necessary. Industry requirements for fresh air are examined and assessed in detail and passive and mechanical ventilation/cooling methods are explored and evaluated. Topics covered include fresh air requirements, optimal climatic conditions, types of ventilation, and forced air systems.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of eight lessons, and can be read online and/or downloaded as a PDF.

To enroll in this course online, go to
http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=68
Online Course

One of the top causes of poor indoor air quality is the inadequate design and maintenance of heating systems. In addition, a lack of humidity control (which has a direct relationship to our heating methods) can have a dramatic impact on both the quality and comfort of an indoor space. Choosing an appropriate heating system needs to take into account a startlingly large number of factors including the type of building materials used, humidity requirements, geographic considerations, and sustainability and environmental considerations.

Through this course you will explore healthy indoor climates, biologically optimal heating systems, Bau-Biological analyses of heating systems, and the various heating systems that support human health.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of two lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
Online Course

According to the Environmental Protection Agency, indoor air can be 2 to 5 times more polluted than outdoor air. In fact, a structure’s indoor climate depends on a complex number of factors that are unique to the built environment. In this course, we will explore the climate inside homes and offices, learn to identify sources of health issues, and examine techniques for improving the quality of the indoor climate. Going beyond indoor air quality, this course evaluates the influences exerted by air composition, temperature, humidity, the dominating outer climate, and electro-climate (ions and space charge).

Topics discussed include living climate, factors of indoor climate, bio-climate and health, thermal comfort, windows and indoor climate, indoor air temperature, indoor air humidity, and building materials.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of eleven lessons, and can be read online and/or downloaded as a PDF.

To enroll in this course online, go to
Online Course

We’ve all walked into a building or home where it was immediately apparent that the inhabitants were the last thing on the minds of the builders. These structures can feel oppressive, heavy, industrial, and unwelcoming. Space & Harmony examines a crucial aspect of architecture and design that remains largely ignored: the psychological impact a building’s design can have upon its occupants. Potentially harmful factors discussed include monotony, noise, incompatible colors, poor or inadequate lighting, and the “zoo effect”. During this course you will explore innovative designs for healthy dwellings, with special emphasis on their influence in creating ergonomic traffic patterns and a sense of flowing spaciousness, and how to best introduce a sense of variety and harmony to a home or workplace that lessens the impact of human psychological stressors.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of nine lessons, which can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=51
Online Course

Architectonics is often defined as the science of architecture. For Bau-Biological purposes, it means so much more. In this course, you will learn essential methods, practices, and principles for creating biologically and ecologically sound structures. We’ll discuss energy conservation during manufacturing and building construction, with emphasis on designing homes that are energy efficient in the long-term.

Topics explored include structures in wood, light-weight construction methods, green & sustainable construction, energy considerations, and seasonal construction.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of two lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to:
Online Course

The city of Münster, Germany was initially built for 14,000 inhabitants in 793 A.D. The current population has multiplied by a factor of almost 20 to its current population of around 270,000 inhabitants, yet its initial design has allowed the city to grow organically. It is now considered the bicycle capital of Germany, where the self-propelled vehicles represent a plurality (37.6 percent) of all traffic in the city.

In Community Planning, we will explore the history of cities, and the crucial role their culture and consciousness should play as fundamental aspects of community design. The topics discussed include green areas, rainwater systems, traffic control, solar architecture, energy considerations, site and space, commerce, and historical sites.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of thirteen lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to [http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=49](http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=49)
Online Course

Taking an objective look at almost any modern city or suburban development reveals that we’ve taken to building structures based upon economics and expediency rather than livability. Tracts of homes are interrupted by strip malls, cities expand upwards and outwards, swallowing up community after community, and traffic congestion and pollution have become two of the greatest problems we face.

Ecological Integration explores this situation, the growing crisis of climate change, and why there is an urgent need for ecologically supportive communities, homes, and commercial buildings. This course discusses why and how dwellings should be planned, built, and maintained to integrate with—rather than in competition with or at the expense of—nature.

Successful completion of this course conveys 7 Continuing Education Credits (CEUs), and/or 7 credit hours toward IBE certification. It is comprised of twelve lessons, which can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=48
Online Course

Want to see what a house built on Bau-Biological principles looks like? In Applied Bau-Biologie, we explore inspiring examples of Building Biology principles in practice, in real world circumstances. Among the dwellings studies is the storied Kanuka House, in Hatepe, North Island, New Zealand. Areas examined from a holistic viewpoint include planning, construction details, and energy systems.

Successful completion of this course conveys 6 Continuing Education Credits (CEUs), and/or 6 credit hours toward IBE certification. It is comprised of three lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
Online Course

Just like the buildings we study, your Bau-Biological education should rest on a solid foundation. In this course, we will explore the history, goals, philosophy and application of Building Biology, including its origins in Germany as Bau-Biologie. The holistic approach to designing, building and maintaining homes and offices is examined and put into practice in ways that are mutually beneficial to human occupants and the global environment. Also discussed are today’s building culture, the 25 Principles of Bau-Biologie, what makes a building biologist, and Building Biology Professional Guidelines.

Successful completion of this course conveys 4 Continuing Education Credits (CEUs), and/or 4 credit hours toward IBE certification. It is comprised of ten lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
Online Course

When it is time to furnish a home or office, it’s really not as simple as a quick trip to Ikea. The design and functionality of furniture are critical elements of an indoor environment. Unfortunately, buying decisions are too often based on cost and/or aesthetics, with little thought to health and wellness.

This course explores proven methods for choosing furnishings, incorporating topics of biological relationships between furniture and indoor climate, synthetic materials and the physiology of furnishings, accident avoidance/prevention, handicapped and special needs dwellings, and safety in children’s play areas.

Successful completion of this course conveys 15 Continuing Education Credits (CEUs), and/or 15 credit hours toward IBE certification. It is comprised of four lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to

Online Course

A barking dog at midnight, neighbors arguing during dinner time, a jackhammer in the morning; these are all too-familiar examples of noise pollution, an often overlooked element affecting the health and well-being of home dwellers, office workers, and school children. Explore the sources and effects of sound on human health and wellness, the inter-relationship between sound and vibration, how to meter, identify, and mitigate or abate sound sources and harmful effects, and proven sound absorption and protection methods.

Successful completion of this course conveys 15 Continuing Education Credits (CEUs), and/or 15 credit hours toward IBE certification. It is comprised of three lessons, which can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
Online Course

Light is the fundamental source of energy driving all life, and as such, one of the most woefully overlooked elements of dwelling construction. From Seasonal Affective Disorder (SAD) to vitamin D deficiencies, a lack of sunlight and incorrect interior lighting has dramatic effects on our health and spirit.

This course will study the biological needs for natural and artificial light in both living and work environments, and the methods for using each. Topics include natural light basics, light exposure and physiological effects, glazing properties, natural and indoor light summary, lighting types, light treatment, light fixtures, and lighting design.

Successful completion of this course conveys 20 Continuing Education Credits (CEUs), and/or 20 credit hours toward IBE certification. It is comprised of twenty-one lessons, which can be read online as well as downloaded as a PDF.

To enroll in this course online, go to

Online Course

It doesn’t take an artist to choose life-nurturing colors for an indoor space, but it does take knowledge. This course explores the wonderful world of colors and how they play a vital role in our daily lives, forming the fundamental elements of art and culture, as well as having real and measurable effects on biology. Topics discussed in this course include the history of color, color terminology, color & the human mind, color & the human body, and Building Biology-centric color advice for the home and workplace.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of nine lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=54
Online Course

A good education begins with solid fundamentals, and this course delivers. Explore the history of building physics, also known as building science, and how to treat the home as a unique holistic system. Topics discussed in this course include building science theory, house as a system, thermal properties, air movement, and moisture movement.

Successful completion of this course conveys 7 Continuing Education Credits (CEUs), and/or 7 credit hours toward IBE certification. It is comprised of seven lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
Online Course

Did you know that on average, Americans spend about 90% of their time indoors? This startling statistic holds from cradle to grave. In fact, infants are likely to spend even more time indoors than children and adults, and with their immune systems still under development and skulls far thinner than those of adults, they are the most susceptible among us to health hazards presented by their indoor environment. This is why it is vital to ensure their environment is safe and health-supporting.

This course will help you to become more fundamentally aware of environmental factors that may affect a newborn’s health. More importantly, it will provide concrete steps for making a baby’s environment healthier and safer. Topics discussed included My Baby’s Breath, Paint for Baby’s Room, Flooring and Furniture for Baby’s Room, Baby Bottles and Sippy Cups, Lights On, Lights Off?, and Leave Those Shoes at the Door.

Successful completion of this course conveys 7 Continuing Education Credits (CEUs), and/or 7 credit hours toward IBE certification. It is comprised of ten lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=52
Online Course

We may choose the right materials for our homes and offices, but even environmentally sustainable and non-toxic materials are only as safe as their finishes. Natural surfaces can have a positive impact on indoor air quality, yet can easily lose their beneficial properties and even become toxic when coated with the wrong products. Similarly, some uncoated natural finishes can also pose risks depending on their concentration, amount and frequency of use. Through a comprehensive discussion of best-practices, you will learn to compare products, educate yourself about health risks from various ingredients, and follow the precautions listed in the assessment of finishes.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of fourteen lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=64
Online Course

When people talk about shelter, they often talk of having a roof over our heads. Of course, what’s holding up that roof is just as important. In this course, we will explore the history and material characteristics of various contemporary construction mediums. Methods and practices are discussed in detail, including light frame construction, concrete block, adobe, cob, straw bale, clay/straw, rammed earth, aerated autoclaved concrete; Pumicrete, and wood insulated concrete forms (WICF).

These mediums are examined from several standpoints, including the health and wellbeing of occupants, energy efficiency, social impact, and cradle-to-cradle reusability.

Successful completion of this course conveys 8 Continuing Education Credits (CEUs), and/or 8 credit hours toward IBE certification. It is comprised of twelve lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
Online Course

Knowledge and understanding of the primary materials and products used in the building industry will go a long way toward helping you build or evaluate a structure using Bau-Biological principles. As essential prerequisites to constructing biologically sound and environmentally sustainable dwellings, we will focus on topics including selection, preservation, treatment for endurance, fungal, insect, and vermin issues, fire prevention, acoustics, electricity issues, microwave radiation, radioactivity, and a summary of biological characteristics and ethical considerations.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of two lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=62
Online Course

Every beautiful and environmentally-sound structure is the sum of its many parts. Evaluation of each individual building material is critical in order to arrive at a dwelling that sustains both life and the environment. Topics examined include structural materials, heat storage, biological valuation of materials, surface temperature, holistic viewpoint, hygroscopicity, moisture content, drying time, diffusion and ventilation, sorption, regeneration, toxins, evaluation of thermal insulation, eco-toxicological evaluation, diffusion (breathing wall), thermal evaluation, and durability.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs). It is comprised of three lessons, and can be read online and/or downloaded as a PDF.

To enroll in this class online, go to
Online Course

Learn some of the basic concepts, terminology, and definitions of building sciences, and how to apply specific criteria with which to evaluate the characteristics of structural materials. We will discuss overall design as an essential element in building a Bau-Biologically and ecologically sound structure. Topics include ecological vs conventional building, vapor, thermal, chemical, and electromagnetic properties, and acoustics.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of three lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbels.org/index.php?option=com_content&view=article&layout=edit&id=60
Online Course

The floor is where we learn to crawl, and then walk. It is the literal support upon which we live our lives. Learn to evaluate the specifics of floor system and floor finishes using the 25 Principles of Building Biology. We will provide a comprehensive overview of floor system designs and techniques, as well as methods by which to judge various materials against those 25 Principles. Topics include an introduction to and evaluation of floor and sub-floor systems, an assessment of both natural and non-natural floor coverings, and their respective acoustic issues.

Successful completion of this course conveys 8 Continuing Education Credits (CEUs), and/or 8 credit hours toward IBE certification. It is comprised of ten lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to http://hbelc.org/index.php?option=com_content&view=article&layout=edit&id=59
Online Course

In this course, you will tour modern-day examples of houses that have been planned and built according to Bau-Biological principles. As there is no such thing as a “standard Bau-Biologie house,” each home will have its own floor plan, materials, and site specifics. We will show how geographical parameters as well as the requirements of those who dwell within come together to create a unique home. In addition, a home designed specifically for the southern hemisphere is included as an addendum, although many of its planning principles translate well to northern hemisphere constructions.

Successful completion of this course conveys 10 Continuing Education Credits (CEUs), and/or 10 credit hours toward IBE certification. It is comprised of eight lessons, and can be read online as well as downloaded as a PDF.

To enroll in this course online, go to
Professional Certification Tracks

• Building Biology Practitioner (BBP)
• Building Biology Environmental Consultant (BBEC)
• Electromagnetic Radiation Specialist (EMRS)
• Building Biology Building Consultant (BBBC)
Designed for environmentally conscious people from all walks of life, Building Biology Practitioner (BBP) certification will give you the knowledge and skills with which to improve your own dwellings and workplaces, and educate others in this increasingly vital area of public health and well-being. BBP certification is also ideal for students and working industry professionals who are seeking to complement their credentials in such fields as architecture, city planning, green building, interior and landscape design, Feng Shui, natural health, and the practice of medicine.

The BBP Certification program aims to provide an introductory level course of study suitable for people from varying backgrounds who have an interest in the built environment and its effect on the health of people and the natural environment. The course is not career training in itself, but is a supplement to the many fields it covers, and complements careers in Architecture, Engineering, Interior and Landscape Design, Green Building, City Planning, Natural Health and Social Work. It can also suit people coming from a personal point of view, whether to improve their own health or to build or direct the building of their own home.

In this 2–3 month home study course, you will learn how to create a healthy indoor climate with no electro or water pollution through the use of natural building materials and building systems. This certification track is completely distance learning, designed for environmentally conscious people who want to improve their homes and start educating others. You will learn what kinds of hazards a house or office may contain—toxic building materials and furnishings, over-electrification, unhealthy heating or air-conditioning systems, etc.—how to detect them, what to do about them, and best of all how not to cause them.

Requirements for completing studies toward BBP Certification:

- No previous experience required
- Successfully complete IBE Course 101
- Successfully complete 70 contact hours of Level 200 online courses
- Sign and submit the IBE ethics statement
- Maintain IBE membership (Basic or Advanced) in good standing

You may enroll at any time; you have up to two years to complete the program.

To learn more about this certification program, go to http://hbelc.org/certifications/bbp
This comprehensive program will equip you with practical, real-world, hands-on experience in identifying, assessing, and mitigating or eliminating pollutants, toxins, and electromagnetic emissions in homes, schools, and offices. You will also become an expert in prevention, certified to advise homeowners, architects, and builders in the methods and practices that create and maintain an environmentally healthy home or commercial building.

A great many alumni of this certification are now running successful environmental businesses, based on their Building Biology expertise; many more came to us as already working professionals, and use the BBEC certification to further their credentials: among them are architects, green builders, engineers, building inspectors, medical practitioners, interior designers, city planners, etc.

The sole requirement to qualify for this certification program is our mentored correspondence course, IBE 101, Natural Healthy Building, which is not included in the advanced purchase option, and we encourage you (though we do not insist) to complete IBE 101 before attending your first seminar. Your certification studies will be comprised of 200 online hours of our 200-level courses, our three, 200-level, instructor-led, 5-day seminars, and a Final Project. The seminars can be attended in any order; each of them is preceded by prerequisite online courses designed to thoroughly prepare you for the seminars’ intensive hands-on experience.

Requirements for completing studies toward BBEC Certification:

- IBE 101; no other prior Building Biology experience required
- Successful completion of 200 hours of 200-level online courses, and their exams
- Attend three 5-day seminars (IBE 211, IBE 212, IBE 213), and complete each seminar’s proctored written exam successfully
- Successful completion of the Final Project (IBE 221)
- Sign the IBE ethics statement (included with your IBE 101 course materials)

You will have up to 2 years to complete this program; most students complete it within one year.

To learn more about this certification program go to http://hbelc.org/certifications/bbec
This program will equip you with practical, hands-on experience and proven real-world solutions for identifying, assessing, and mitigating or eliminating electromagnetic emissions (EMR, EMFs) in homes, schools, offices and commercial buildings. You will also become an expert in prevention, certified to advise homeowners, home buyers, architects, builders, inspectors, and engineers in the methods and practices that create and maintain a minimized presence of electromagnetic fields in homes and commercial buildings. Throughout the program we will concentrate on teaching you the skills needed to make a genuine positive impact in your community and in the world at large.

Requirements for completing studies toward EMRS Certification:

- Successfully complete our mentored correspondence course: IBE 101
- Successfully complete 100 contact hours of Level 200 online courses
- Successfully complete two 5-day seminars: IBE 212 Electromagnetic Radiation and IBE 213 Natural Healthy Building & Remodeling Practices, and successfully complete our 4-day seminar IBE 312 Advanced Electromagnetic Radiation
- Sign and submit the IBE ethics statement
- Beginning two years from the date of your certification, and every two years thereafter, show proof of your ongoing education in the field, via 40 CEUs
- Maintain IBE membership (Basic or Advanced) in good standing

You have up to two years to complete the program.

To learn more about this certification program, go to [http://hbelc.org/certifications/app](http://hbelc.org/certifications/app)
The BBBC certification course is targeted at training building and design professionals in the principles of Building Biology for new construction and renovation. This comprehensive program will equip you with practical, real-world, hands-on experience in the methods and practices of designing and constructing (or remodeling) homes and other structures that create an environmentally healthy home or commercial building. Upon completion of the following curriculum, you will be required to submit a mentored “thesis,” based on new construction or renovation to satisfy and finalize IBE certification. This project can be a real time project that the candidate is working on or a theoretical design.

Requirements for completing studies toward BBBC Certification:

- IBE 101, Natural Healthy Buildings.
- Attend three 5-day seminars (IBE 213, IBE 214, IBE 215), and complete each seminar’s proctored written exam successfully.
- Successful completion of the mentored thesis.
- Sign the IBE ethics statement (included with your IBE 101 course materials).

You have up to two years to complete the program. Two of the three required 5-day seminars that here follow are exclusive to this program:

**IBE 213, Building Science and Building Biology:** This seminar delivers an holistic understanding of the physics of Buildings, an introduction to Building Science for Conventional North American Construction HAAS (House as a System), and an introduction to Building Biology for Traditionally-based Contemporary Construction HAAO (House as an Organism).

**IBE 214, Electromagnetic Radiation (EMR) & Indoor Air Quality (IAQ) for Architects and Builders:** This seminar delivers specialized knowledge in both EMR and IAQ for new construction. These topics are taught with an emphasis on preventative design for new construction and renovations.

**IBE 215, Design of Buildings and Communities:** This seminar focuses on various aspects of design that can and should incorporate Building Biology principles. Covered in depth will be site selection, design for climate, harmonic design, and community design.

To learn more about this certification program, go to [http://hbelc.org/certifications/bbbc](http://hbelc.org/certifications/bbbc)
Seminar Instructors

Paula Baker-Laporte, FAIA
Stephen Collette, BBEC
Gail M. Brandys, MS, CSP
Martine Davis, BBEl
Larry Gust, Electrical Engineer
Rob Metzinger, Electrical Engineer
M. Spark Burmaster, Electrical Engineer
Paula Baker-Laporte, FAIA, co-instructor with Stephen Collette of IBE 213, graduated from the University of Toronto, School of Architecture in 1978, and from The Institute of Bau-Biologie and Ecology in 1995. In 2007, she was elected into the College of Fellows of the American Institute of Architects. She has headed a wide-ranging architectural practice based in Santa Fe, New Mexico since 1986 and now lives and works in Ashland Oregon. She has dedicated her practice to the precepts of environmentally sound and health-enhancing architecture since 1992, and her firm continues to lead in the fields of healthy and natural design and design and consultation for the chemically sensitive. She was selected as one of our nation’s top 10 green architects in Natural Home’s July/August 2005 edition.

Together with her husband Robert, Paula developed the EcoNest® home concept; EcoNest projects have since been built throughout North America and these projects are featured in several books, including Designing your Natural Home by David Pearson, Green by Design by Angela Dean, Sustainable Residential Interiors by Associates III, and Space Matters by Katherine Cox as well as nationally published magazines including Natural Home, Fine Homebuilding, Residential Architect, Organic Style Magazine, Yoga Journal, Inspired House and Ultimate Home. For photos of Paula’s architectural designs, articles, upcoming seminars and lectures, and to contact Paula, please visit the website: www.econest.com.

Paula is the primary author of Prescriptions for a Healthy House, 1st,-3rd edition, (New Society Publishers 2008) and co-author with her husband Robert Laporte, of EcoNest: Creating Sustainable Sanctuaries of Clay, Straw and Timber, (Gibbs Smith, 2005). She is a contributing author to several other books.
Stephen Collette, BBEC, co-instructor with Paula Baker-Laporte of IBE 213, is a Certified Building Biology Environmental Consultant, and principal of Your Healthy House, based out of Lakefield, Ontario, Canada. Stephen is a retired straw bale builder, having worked on two dozen straw bale structures across Ontario and Quebec, from small cottages to 13,000 sq. ft structures and everything in between.

Stephen has an engineering background and became passionate about healthy housing when his family became ill due to exposure to mold. Stephen conducts indoor environmental inspections on houses and other buildings to determine health impactors based on building science and environmental health concerns.

Stephen is a LEED AP (Leadership in Energy and Environmental Design Accredited Professional) with the Canada Green Building Council. He holds a Building Science Certificate from the University of Toronto and is a certified Building Science Specialist of Ontario. As a consultant Stephen helps people make healthier, more environmentally friendly building choices. A published author, he writes and lectures across North America on healthy, natural and green buildings.

Please visit his website at www.yourhealthyhouse.ca
Gail M. Brandys, MS, CSP, co-instructor with Martine Davis of IBE 211: Gail is the President of Occupational and Environmental Health Consulting Services in Las Vegas, NV. She has been involved in safety and health consulting for industries and institutions for over 30 years. Indoor air quality investigations in residential and commercial settings have been a major aspect of her consulting business for over 20 years.

Gail has a Masters Degree in Industrial Safety Management from Northern Illinois University and a BS in Secondary Science Education from the University of Delaware. She is a licensed Asbestos Inspector and Asbestos Management Planner. She is a retired Certified Safety Professional (1987-2011), and has held certifications or licenses as a Certified Indoor Environmental Consultant, a Certified Mold Remediator, a licensed Lead Inspector and Risk Assessor, a licensed Radon Tester and Mitigator, and a licensed Asbestos Remediation Contractor/Supervisor.

She is responsible for developing safety and environmental programs and conducting training sessions for client companies in both English and Spanish on a wide variety of topics. She has been teaching EPA-accredited asbestos training classes at Chicago area colleges, universities and private institutions for over 25 years. She is an accomplished lecturer and has presented at numerous national and international conferences including the World Safety Organization, the American Society of Safety Engineers, the Environmental Information Association, and the Indoor Air Quality Association.

Martine Davis, BBEI, co-instructor with Gail Brandys of IBE 211, is President of Indoor Environmental Testing, Inc., the company she founded in 2000. A computer engineer for 20 years, Martine was drawn to Environmental Health and Air Quality after she suffered a devastating illness later found to be caused by a “sick home.” At the time, little was known about environmental illness. She was misdiagnosed with several diseases and not given much hope for recovery.

In order to get well, Martine embarked on a nationwide hunt for education and training on the effects of indoor air pollution and the impact of the building environment on human health, which of course brought her to IBE, where she completed her certification studies, and went on to instruct countless others at various IBE seminars. In addition to investigating Indoor Air Quality problems, she is a sought after speaker and writer on Environmental Health issues.

Martine is a graduate of Illinois State University and the International Institute for Building Biology and Ecology. Her expertise includes indoor environmental inspections, measurement and interpretation of environmental parameters, safe building practices, air and water purification systems, and countermeasures for electromagnetic and high frequency radiation exposure.
Larry Gust, an electrical engineer, is co-instructor with Rob Metzinger of IBE 212. Larry has been teaching classes and seminars for IBE since 1996, and conducting on-site assessments/improvements of the electromagnetic issues of indoor environment since 1993. He is a Certified Electromagnetic Radiation Safety Advisor with the Science And Public Policy Institute. For twenty-five years he was a member of management at Dow Chemical and subsequent to that held similar positions at the Mobil Corporation, working in manufacturing, product development and total quality management. Larry also currently serves as president of IBE’s board of directors.
Rob Metzinger is co-instructor with Larry Gust of IBE 212. He is an Electronics Engineering Technologist, Certified Electromagnetic Radiation Safety Advisor (CERSA) Consultant, President of Safe Living Technologies Inc., and one of Canada’s top EMR Technical Experts. Safe Living Technologies Inc. provides EMF safety solutions for North America, through extensive knowledge and scientifically proven EMF technology that helps detect, protect and prevent the negative effects of EMFs on the human body.

From his 20 years experience as an independent corporate electronics field service engineer, Rob has developed a strong background in electrical and electronic problem solving along with strong customer relation skills. He is an authority on all issues related to EMF and RF pollution. Education, Detection and Protection are the three pillars of his business.

Rob’s History:

Spark Burmaster is co-instructor with Larry Gust and Rob Metzinger of IBE 312. An IBE board member and secretary of the board, Spark’s professional experience spans forty years of solving electrical and electro-magnetic exposure problems.

Among Spark’s current projects, he is consultant to Organic Valley, a mission-driven nationwide cooperative of family farmers, solving farmland issues of stray voltage, electrical wiring, and electro-magnetic exposure. His career goal is to compile his cumulative wisdom and research on electro-magnetic exposure into a text book. He is co-founder of the ULEME project, a research firm that is developing ultra-low electro-magnetic exposure devices and techniques.
Helmut Ziehe’s Building Biology calling began with an “ah-ha” experience in North Africa in 1980 that changed the course of his life and career. As resident engineer for a city of 90,000 inhabitants, he noted that a majority of people had abandoned their government-provided homes in favor of living in tents. Their government homes were constructed of concrete, a poor material health-wise, that heated the interior rooms to an extent that air-conditioning could not bring adequate relief. A seasoned architect with a Dipl.Ing. degree from the Technical University of Berlin, and a Master’s in Tropical Studies from the London School of Architecture, Helmut unearthed the solution by examining historical local homes, some of which dated back 4,000 years, and found they used clay as their basic building material and utilized covered walkways for shading and ventilation.

This eye-opening experience led Helmut beyond his career as a modernist architect to embrace the precepts of Bau-biologie. Once his engineering assignment in North Africa was completed, he began his studies under Dr. Anton Schneider at the Institut für Baubiologie + Oekologie (IBN), and never thereafter returned to his “conventional” architecture practice. In 1985 he moved to the United Kingdom, where he established the English Institute of Bau-biologie, personally translating from German into English the twenty-three IBN course packs that became the IBE Correspondence Course for training new Building Biologists. He then relocated to the United States in 1987, founding the International Institute for Bau-Biologie & Ecology, in Clearwater, Florida, which serves to this day all of North America, as well as other English speaking and Latin American countries.

In 1989, when a reporter asked Helmut, “How many students does the Institute have?”, Helmut answered: “Only eight.” To which the reporter replied: “Everyone has to start small.” Since that day, the institute Helmut founded has enrolled almost 2,000 students.
IF YOU HAVE SPECIFIC QUESTIONS OR CONCERNS ABOUT OUR TRAINING PROCESS, OR IF YOU JUST WANT HELP WITH DECIDING WHICH COURSES OR CERTIFICATION PROGRAMS ARE BEST FOR YOU, ONE OF OUR ASSOCIATES WILL CONTACT YOU PROMPTLY.