IBE 312 2022

Advanced Electromagnetic Radiation

Enrollment is open only to students who have successfully completed IBE 212 Electromagnetics; exceptions can be made for candidates with professional real-world experience by applying to BBI and after considering specifics supplied. Ask for a waiver application.

Participants are required to review the prerequisite course work for IBE 212 as this basic material will not be reviewed, and it is assumed that participants know this information and are totally familiar with it, and are able to make measurements with the basic instrumentation used in IBE 212.

The daily schedule includes lectures, instrument demonstrations, group labs with recommended instrumentation, inter-active discussions of lab results and, finally, a full assessment of retreat premises.

Building Biology Institute
The science of healthy buildings

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Please Note Carefully: The hands-on labs conducted 4 out of 5 days consist of realistic situations set up by the instructors where elevated electric, magnetic and radio frequency fields exist. These fields exist in order to practice use of instruments for evaluation of conditions and identification of sources and to practice remediation of the fields. These field levels exceed those found in most normal circumstances. Electric fields may range up to 100 v/m close to sources. Magnetic fields will be of 6 milli-Gauss in large areas of the lab room and closer to sources. Pulsed, digital RF levels will range up to several thousand microwatts per square meter close to sources. While efforts are made to limit the length of time these fields are on, they do exist for some time during each lab. In the final lab all 3 fields types will exist possibly together. Please consider this reality in making your decision to attend this seminar.

Cancellation Policy

Seminar students who paid their tuition in full, and then cancel at least thirty (30) days before the first day of classes, will receive a tuition/tuition deposit refund in full (100%). Those who cancel less than thirty days out, but more than ten days out, and had paid their tuition in full, will receive a fifty percent refund; the amount they forfeited will be considered on deposit for one year, and may be applied toward any subsequent BBI event or online course. Those who cancel ten or fewer days out will not receive a refund, but their entire forfeited payment will be considered on deposit for one year.

If a student cancels out of a seminar after having received a digital and/or hard-copy of that seminar's manual, and elects to apply their tuition credit to a seminar other than the one for which they cancelled out, their tuition credit will be reduced by the value ($425.00 USD) of the course manual for the seminar out of which they cancelled.

Regarding seminar room & board, our refund policy is dependent on the chosen venue's cancellation policy; if the venue should issue a refund, BBI will pass 100% of the venue's refund to the student. In like manner, should the venue refuse BBI a refund, in whole or in part, then said venue's policy becomes fully representative of BBI's policy.

Extended Policy Stipulation

BBI does not endorse products, methods, practices, services and/or business opportunities (hereafter referred to as “offerings”) that are extraneous to BBI’s policies, practices, and/or curriculum, regardless of whether they are vended/sponsored by our alumni, students, or by outside third parties or organizations.

This policy extends to our seminars, our biennial conference, and all other live or interactive events. And while participants in our events are not restricted by BBI from apprising their fellow participants of any offerings, regardless of whether they are or may be or may not be in conflict and/or in competition with BBI, they may in no way solicit or otherwise “pitch” their fellow attendees during said event(s). Subsequent to said events, neither offerings nor follow-up appraisals of offerings may be made or attempted by any means - telephone, e-mail, or snail-mail - without the expressed prior consent of their intended recipient(s).

BBI reserves the right to deny/rescind enrollment, whether first-time or continuing, to students it deems to present the risk of being or becoming disruptive of our program presentations, and/or a distraction for our students from what they have come to us to learn and experience.

Discrimination: Zero Tolerance

The Building Biology Institute (BBI) does not and shall not discriminate on the basis of race, color, religion (creed), gender, age, gender expression, national origin (ancestry), disability, marital status, sexual orientation, or military status, in any of its activities or operations. These activities refer to any and all interactions involving our potential or current students and our alumni; these operations include, but are not limited to, hiring and firing of staff, recruiting/selecting of vendors, volunteers, and providers of services. We have been and remain committed to providing an inclusive and welcoming environment for all.

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 BBI Protocol for *Measurement of Non-ionizing EMR in Low Rise Residential Buildings* will be introduced and used throughout the seminar to guide measurement technique.

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.

Participants are required to review the course work for IBE 212 as this basic material will not be reviewed and it assume that participants know this information and are totally familiar and are able to make measurements with the basic instrumentation use in IBE 212.

Participants are also required to purchase and read prior to arrival *Tracing EMFs in Building Wiring and Grounding*, by Karl Riley: Available at Barnes & Noble and Amazon for about $25.

Enrollment is open only to students who have successfully completed IBE 212, Electromagnetics, in the past two years. An exception can be made for students who attended IBE 212 three or more years ago, as follows: should you meet this exception, please ask to be sent a waiver application, which will be reviewed by the instructors, whose decision to approve or decline your waiver application will be final.

This seminar conveys 40 Continuing Education Credits (CEUs), accepted by AIA, ACAC, and InterNACHI, for which the successful completion of a comprehensive written exam will be required.

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/practice how meters can be used to measure and map EMR in buildings; learn/practice data logging and its uses in the assessment.
3. Study and understand the BBI *EMR Measurement Protocol for Low Rise Buildings*.
4. Learn about various methods of shield/blocking EMR and where each the application criteria for each type of shielding.
5. Learn how to construct and cost a remediation plan for each of these energies.

Seminar Schedule

Day One, Monday, 12 December: AC Electric Fields

1. Learning Objectives & Seminar Overview
2. ELF & VLF Electric Fields
    a. Body Voltage Measurement
    b. Advanced Instrument for 3D Electric Fields
    c. Measurement Protocol
3. VLF Mitigation with Filters
4. Electric Fields in Office Environments
5. Shielding Options
6. Lab– Electric Fields

Day Two, Tuesday, 13 December: AC Magnetic Fields

1. ELF Magnetic Fields
    a. Advanced Instrument for 3D Magnetic Field Measurement
    b. Measurement Protocol
    c. Data Logging and incorporation in Report
    d. Source Identification, Frequency Component Analysis
    e. Four Types of Building Wiring Errors
    f. Neighborhood Distribution System Fields
2. Lab– Magnetic Fields

Day Three, Wednesday, 14 December: Magnetic Fields Cont'd; Radio Frequency

1. Magnetic Field Remediation
    a. Wiring Errors; Parallel Neutrals
    b. Shielding Theory
2. Radio Frequency Radiation
    a. Safety Standards; Health Effects
        i. RF Source Identification including Smart Meter ID
3. Lab- RF Measurement

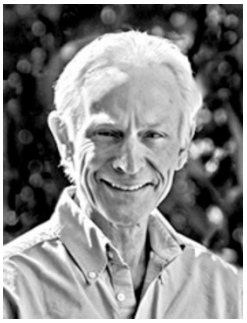
Day Four, Thursday, 15 December: Radio Frequency Cont'd

1. Instruments for RF Measurement
    a. Measurement Protocol
    b. RF Data Logging
2. Sources of Digital Wireless RF
3. Modulation Technologies: 2G, 3G, 4G, 5G and Measurement Implications
4. Lab- RF Measurement and Source ID
5. RF Shielding
6. Lab-Facility Assessment

Day Five, Friday, 116 December: Report Writing & Case Studies

1. Client Communications– Phone & On-site Interaction; Report writing
2. Final Project for BBEC
3. Apprenticeship Program; Business Support Program
4. Q & A
5. Closed Book, Proctored Exam at Noon

Note: The daily schedule may change as planning for the 2022 seminar proceeds.



Larry Gust is an electrical engineer. Mr. Gust has been teaching classes and seminars for BBI since 1996. He has been conducting on-site assessments, recommending and planning remediation approaches to resolve electromagnetic pollution issues and supervising remediation activity since 1993. Mr. Gust is an electrical engineer, Certified Building Biology Environmental Consultant and Electromagnetic Radiation Specialist. For twenty-five years he was a member of management at Dow Chemical and then at the Mobil Corporation.

Larry has appeared on the *Today Show* and WABC's New York *Viewpoint*. He has spoken at the Scripps-Mende Well Baby Program, the LA Cancer Control Convention, the World Congress on Integrative Medicines. Mr. Gust appeared in *Greenovate* a program on the *Planet Green* Network devoted to environmentally conscious living. He has lectured for the *Electro- smog* seminar hosted by Dr. Dietrich Klinghardt, MD. Mr. Gust has been a guest on numerous radio programs discussing how to create a safer more health supporting home. To contact Larry, please visit: https://gustenviro.com/

Rob Metzinger is by trade, an Electronics Engineering Technologist. Rob has 20+ years of experience as an independent corporate electronics field service engineer. This has yielded him a strong background in electrical and electronic problem solving along with customer relation skills.

Rob is also an BBI certified Building Biology Environmental Consultant, a certified Electromagnetic Radiation Specialist and an Electromagnetic Radiation Safety Advisor with the Science of Public Policy Institute.

Rob is currently the President of Safe Living Technologies Inc. and one of Canada's most experienced EMR Technologists. He is also a factory certified Gigahertz Solutions Test Equipment Technician and Instructor. Rob has taken his 18 years of experience in the field of Electromagnetic Radiation to the next level and has become an educator with BBI. To contact Rob, please visit his website at www.slt.co

Mitch Marchand is an EMF consultant with a background in Electrical Engineering who helps people use their technology in a healthier way. Previously as an Electrical Engineer, Mitch programmed computers that controlled power plants in Canada and the US for 9 years. Now as an EMF consultant, certified Electromagnetic Radiation Specialist and Founder of EMF Aware, Mitch has explored the wireless technology and electrical environment of hundreds of homes and businesses since 2011.

As featured lecturer Mitch has spoken in medical clinics, to special interest groups, and the general public on the topic of EMF exposures from wireless technology and electricity. But, most importantly, Mitch is the chief cook and dishwasher for his wife and young son in Calgary, Canada. To contact Mitch, please visit emfaware.ca.

Venue

Kanuga Conference & Retreat Center
130 Kanuga Chapel Drive
Hendersonville, North Carolina 28739
https://www.kanuga.org

BBI arranges your lodging and your food via contracts with the seminar venue, and your contract is with BBI, not with its venue. We must ask that any issues, concerns, or needs you may have regarding your room or your food be addressed to Erik Rosen, our Programs Director, who will be on-site and available to you 24/7.

We make every effort to ensure that your lodging room, as well as the classroom, dining room, and commons areas satisfy all Building Biology Standards for a health-supporting environment, and this venue's management joins us in our efforts. Please note, nonetheless, that no venue situated "on the grid" is entirely ideal.

Overview: Please pay your tuition and room & board in advance to the Building Biology Institute. Payment may be arranged online at BBI's website (click here), or by calling IBE's executive director (505-954-1684). To pay by check, please mail your payment to: IBE, P.O. Box 8520, Santa Fe, New Mexico 87504.

Shuttle Services to/from Venue/Ashville Airport: Uber and Lyft services are available for approximately $30 each way. Or, Ashville Airport Shuttle: (828) 231-1053. If you'll be using Ashville Airport Shuttle, we recommend strongly that you reserve your ride well in advance.

Schedule: Classes begin on Monday, 12 December. Please arrive on Sunday, 11 December, and remain through your completion of the final exam, at or around 3:00 PM on Friday, 16 December.

Lodging: Each student will be provided a private room with private bath. Check-in begins at 3:00 PM on Sunday, 25 September; check-out is 10:00 AM Friday, 30 September. To arrange early arrival, or an extended departure date, please contact our programs director, Erik Rosen, not the venue:
< erik@buildingbiologyinstitute.org >.

Meals: Freshly prepared buffet-style meals will be served three times daily in the Kanuga Lake Lodge dining hall. Meals are prepared using local produce, when available, including herbs and vegetables grown in Kanuga's organic garden. Vegetarian or other special dietary requirements will be accommodated upon request. Meal service begins with dinner Sunday night from 5:30-7 p.m.

Attire: Please dress at your own comfort level (as casual as you please). Also please note that, while your leisure time will be limited, Kanuga's property, including its 30 acre lake, offers an impressive tableau of health-related recreational opportunities.

NOTE: All indoor areas are smoke-free. We ask that all students, in consideration of attendees who may suffer from allergies, to please refrain from using/wearing scented personal products.