

**Day 1 I: Theory and Concept: Ochs: Understanding the Bases of EEG-Driven Stimulation:**

**Abstract for Day 1:** The history LENS approach to neurofeedback, as well as its similarities and differences from traditional neurofeedback are discussed in day one, along with the essential concepts, core paradigm, principles, and areas of applicability. Dominant frequency, frequency offset, feedback frequency, sensitivity, hyper- and hypo-reactivity to stimulation, cortical permeability and integration, and structural vs. functional impairments and improvements are some of the areas covered. A first LENS session will be done with a patient to demonstrate intake and initial decision making.

(duration of each item in parens, with 15 minutes out for break)

• **Paradigms and Principles: – 6 hours**

Objectives, Day 1:

- a. To provide a theoretical and conceptual overview of the LENS approach, especially in relation to the theory, concepts, and practices of traditional neurofeedback.
- b. To define the core paradigms and principles of the LENS approach so that the central elements, issues, approaches, and practices make sense to the attendees.

Objective: To provide the LENS system with both a biofeedback and neurofeedback context.

Content:

- Placing Neurofeedback within the field of Biofeedback (40)
- Placing LENS within the field of Neurofeedback (40)

Objective: To provide both conceptual and historical context.

Content:

- The Concept of EEG-driven Stimulation (30)
- History and development of the LENS (35)

Objective: To describe areas to which the LENS applies as well as to begin to describe the core concepts underlying how the LENS works.

Content:

- Fields of Application of the LENS (40)
- The core algorithm: Dominant Frequency (20)
- Offset (30)
  - Defined
  - Purpose
  - Effects on the dominant
  - The offset as a pressure on the dominant frequency to move out of its habitual excursion

- Positive and negative offsets and the tendency of the dominant freq to be higher and to function well

Objective: To present CNS problems as problems with stimulation

Objective: To discuss major patient variables: sensitivity, reactivity, fatigue, and hardness

Content:

- Stimulation, under- and over- (40)
- Sensitivity and Reactivity (45)

Objective: To define and provide the clinical implications of comodulation

Content:

- Comodulation (Amplitude binding) the encumbering of interdependence among sites (20)

Objective: To underscore the importance of cortical (vs. subcortical) competence, as well as some of the other qualities, as well as the process of transitioning between cortical competence and incompetence, and back again.

Content:

- Cortex: Its function as an inhibitor to subcortical activity (15)
- Selective permeability, dysfunction, and the permitting of selected band activity to be recorded at the scalp leading to the appearance of band activity (15)
- Functional versus structural impairments and improvements (15)

## **Day 2 II: Hardware and Software Development:**

**Abstract for Day 2:** The technical historical development of the LENS hardware and software is detailed to exemplify material covered in Day 1: why flashing lights were initially used; how the hardware modernized to include microprocessors and the consequent problems that led to the discovery of the radio frequency carrier wave for the feedback – and why flashing lights were dropped. The place that accidents, errors, and mistakes had and how they shaped the development of the modern system. The evolution of the Report generator and how it guides clinical decision making and re-evaluations. Features of the USE3 J&J Physiolab software: how to turn it on and off; features of the screen menus, session controls, display controls, saving and exporting data. A second session with the patient will be done to illustrate part of the evaluation. Practice will be given in the Offset evaluation.

Objectives, Day 2:

- a. To concretize the Day 1 presentations by describing the LENS hardware and software as they developed historically so that the both hardware and practices make technical sense to the attendees, and the hardware and software exemplify the paradigms and principles discussed in Day 1.
- b. To describe several inadvertent triple blind experiments that help move the effects of the LENS beyond placebo.
- c. To demonstrate and familiarize the attendees with elements of the USE3 and LENS software for Windows XP.
- d. To practice starting and exiting from the LENS software, as well as running and terminating feedback sessions.

Objective: To describe the predecessors to the LENS

Content:

- Light and Sound Machines (40)
- The Predecessors and Competitors of Modern LENS (40)

Objective: The evolution of the EEGs and data analysis software

Content:

- From the J&J I-400 to the J&J C2 Family of EEGs (40)
- From Excel macros to the report generator (25)
- Development of the Report Generator (40)
- Concepts emerging from the Offset and Map: Empirically deriving the Offset and Site Treatment Plan (40)

Objective: To introduce USE 3: turning it on and off, the toolbars, and saving and exporting data.

Content:

**Introduction to Use USE3: - 1 hour**

- Features of the graphic interface
  - Entering USE3 (10)
  - The Screen Menu (10)
  - The Session Controls: Task scheduler, Pause, Record On/Off/Exit (10)
  - The Display Controls (10)
  - Saving and exporting data (10)
  - Excel and troubleshooting (10)

Objective: Provide practice in turning USE 3 on and off, working session and display controls, and saving and exporting data.

Content:

• **Practice with screen elements: – 3 hours**

- The Instruction Summary as the source of all instructions (10)
- Client data (10)
- Choosing Applications (5)
- Sensor site and impedance (10)
- Task scheduler, task duration, and intensity setting (20)
- Pausing and resuming (5)
- Stopping the session (5)
- Exiting (10)
- Updating software (10)
- How to set up and run an Offset Evaluation (40)
- How to set up and record a 19 site Map (40)

## **Day 3            The Report Generator:            – 4 Hours**

**Abstract for Day 3:** Importing data, Offset and Mapping reports will be explicated, demonstrated, and illustrated in the third session with the patient. Participants will get practice in performing topographic brain maps. We will also discuss two paper and pencil questionnaires: a CNS questionnaire – the best predictor of outcome for the LENS, and a sensitivity/reactivity questionnaire which helps predict and identify variables that help select feedback dosage, as well those that may bear on abreactions during treatment. Practice in performing feedback after considering how to put together information from the Offset and Mapping evaluations. Session three with the patient will occur, demonstrating the integration of the information heard and practiced.

### Objectives, Day 3:

To demonstrate the management of data from its export from USE3, to its import and generation of information, treatment plans, and treatment evaluation in the Report Generator.

### Content:

- About data: where it's located; copying (processing) into the Report Generator (10)
- Processing, or importing, session data (10)

Objective: To provide practice for attendees in making topographic maps and offset evaluations.

### Content

- Practice with the Report Generator (3 hours, 25 minutes)
  - Importing
  - Choosing reports
  - Viewing and printing reports
  - Combining sessions for maps
  - Correcting sensor sites
  - Replacing lost reports
  - Updating software

Objectives:

- Again, to concretize the paradigms and principles by the use of the Report Generator to show how it becomes a tool to generate treatment plans and treatment re-evaluations.
- To illustrate issues important in the conduct of the LENS approach so that the clinician can more intelligently inform the prospective client about the risks and benefits of his/her particular involvement.
- To present clinical questionnaires related to central nervous system (CNS) functioning, as well as sensitivity, reactivity, robustness, and suppression to help the clinician predict the course of therapy.
- To present ways to integrate the historical, clinical, and EEG data into something that makes sense to the clinician and prospective client.

Content:

- **III: Developing Clinical Skills: – 4 Hours (less 15 mins for break)**
  - Tools of Evaluation:
  - Clinical Interview
  - The CNS Questionnaire
  - The Reactivity, Suppression, Hardiness questionnaire
  - Reading the Offset Evaluation
  - The Map as a session treatment plan

## **Day 4            More Practice; Managing Treatment: – 4 Hours (less 15 mins for break)**

**Abstract for Day 4:** More practicum of Offsets, Mapping, and Treatment; Discussion of issues related to client complexity; what is know, not known, guessable, and derivable from the application of evaluations and treatment. How to make a therapeutic alliance; symptom indexes; overdose vs. treatment milestones and issues; re-evaluation of progress and protocol changing; topographies of healing; closing.

Objectives, Day 4:

- a. To obtain more practice doing evaluations and treatment
- b. To begin the discussion of clinical complexity: integrating client sensitivity, re-formulating prognoses, enlisting collaboration from the client, symptom indexes,
- c. To discuss and handle questions on such issues of discriminating stages of treatments from overdose, redefining treatment protocols, and the courses of healing and recovery of function as they correlate with systems of symptoms.
  - Conducting Early Treatment Sessions
  - Making a Prognosis after Three Treatment Sessions
  - Discerning the simple versus the complex case
  - Helping the Client to be a Colleague
  - Keeping Clinical Progress Notes
  - The Subjective Symptom Rating Scale
  - When to bring in Psychotherapy or other modalities

Objective

- Making sure everyone has administered an Offset, Map, and Feedback Session

Content:

Continued practice in Offset, Map, and Feedback session evaluation – 4 hours less 15 minutes for break.

Objective:

Presentation of clinical material re hurdles in treatment, changing protocols, how to provide a context for the feelings they encounter and will probably experience.

Content:

- **Evaluating Response to Treatment: – 4 Hours (less 15 mins for break)**
  - Preparing the client for Overdose
  - Distinguishing overdose from experiences to go through
  - Processing Overdose
  - Changing Protocols
  - The Topography of Healing
  - Questions, Discussion, and Exam