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# List of Training Modules

Thu, 07/24/2008 - 3:58pm — [nkaplan](#) <sup>[1]</sup>

LNO and information managers interested in training created this list of possible training modules to schedule in the spring of 2008:

Hands on Cyberinfrastructure Training modules available at LNO by LNO staff:

**1. Basics of XML** - towards synthesis applications through quality metadata Covers: XML basic rules, schemas, and the EML standard. Editors for XML, and custom editors for metadata in EML. XML everywhere: XML in web services, XML in webforms, XML in mash-ups, XML in standards, XML in databases. Brief overview of synthesis tools, such as Kepler, EcoTrends and other prototypes.

Prerequisites: None.

Objectives: Good knowledge of XML and its potential as a integrative and sustainable managing tool.

## 2. Eml editors

Covers: Why use XMLSpy / oXygen to edit EML? Targeted Editors: BRIEF overview of Morpho, and the new EML editor (in development)

Prerequisite: knowledge of XML basics (XML rules, XML schemas). Familiarity with EML and EML best practices.

Objectives: a good exposure to some of the leading XML editors and a chance to join the group of first testers/developers of the new and exciting web based EML editor

## 3. Database management systems for the web

Covers: Basic data modeling using essential principles to build a relational database from scratch and fundamental Structured Query Language (SQL) commands such as insert, update, delete, and select with a focus on web applications.

Prerequisites: Basic knowledge of or experience with relational database systems.

Objectives: Learn basic RDMS Principles to create relational database for the development of web based applications.

## 4. Web-to-database connections with PHP

Covers: Topics covered include: how data-driven websites work and are designed; PHP and MySQL (introduction and advantages); building PHP pages using Dreamweaver to collect and display information from a MySQL database; Basic Javascript commands

Prerequisites: Knowledge of XHTML and Structured Query Language (SQL).

Objectives: learn the basic principles of Database driven web sites and serve as a starting point for development of database driven web based applications.

## 5. Working with XForms - Agile web forms

Covers: Ajax-like web form performace without Javascript. Knowledge of XForms and Orbeon (that encompasses XForms, XPL, application controller and XSLT), Make forms that validate content instantaneously. Forms that implement your XML schema.

Prerequisites: 1) Basic understanding on how to work with the Tomcat server (to deploy Orbeon). 2) A good understanding of XML, some XSLT desirable. 3) A know how of Unix shell/DOS shell directory navigation. You need to state how would you use XForms/Orbeon, bring your project to

class, tell us about your project in detail.

Objective: a cutting edge technology that will enable you to deploy quickly new ways to capture data, and operate on data over XML.

## **6. Making EML (or XML) documents look readable on the web**

Covers: How to make XSLT stylesheets to make appealing web pages on metadata. Transforming EML documents into BDP (FGDC) documents and vice versa

Pre-requisites: 1) HTML, XML, and how to edit XML. (XML Spy, etc), 2) Some unix command line knowledge a plus or SOME knowledge on how to navigate your way in windows using a shell (cmd.exe) will help (Xpath), 3) You need to state how would you use XSLT, bring your project to class, tell us about your project in detail.

Objective: An in-depth knowledge of how to create stylesheets, incorporate them into EML applications and information architecture.

## **7. Jpgraph : offering nice real time plots of data coming out of your database**

Covers: how to offer dynamical graphics ( basic plots, time series, histograms, pie-charts ) with your back end database

Pre-requisites: 1) some knowledge of PHP, some mySql or some SQL flavor, state how would you use JpGraph, bring your project to class, tell us about your project in detail.

Objective: a working system to offer plots in your site.

## **8. Introduction to Web Mashups with Javascript and Google Maps**

Covers: Developing Web Mashups by using Javascript and the Google Map Application Programmers Interface (API). This course will review and present information relating to intermediate HTML, the HTML Document Object Model, Javascript (including Javascript Objects), and the Google Map API.

Prerequisites: Basic understanding of website architectures, including browser/server interactions, writing HTML-based web pages, and basic computer programming principles.

Dynamic web programming (e.g., php, asp, jsp), including database interaction, would be helpful (but is not necessary).

Objective: To obtain a fundamental understanding of Web Mashups, including how they are implemented by using Javascript and the Google Map API in a "hands on" demonstration.

Completion of this course should allow the participant to develop a Google Map Mashup at their own institution or site.

## **9. Introduction to Cyber security**

Covers: This module will introduce the participant to a myriad of cyber security issues that fall into domain of the site information manager including network security, hardware security, software security, and data security. The overview will discuss threats and attacks, privacy issues, and common myths. Hands on exercises will be in using the Public Key Infrastructure (PKI) and encryption in everyday computing.

Prerequisites: none.

Objective: To obtain a fundamental understanding of cyber security issues that pervade our every activity. The course is not designed to be comprehensive but to give the participant a basic understanding of some of the most common security issues that effect the day to day information management operation.

Hands on Cyberinfrastructure Training modules available at LNO by ESRI Authorized Instructor:

## **10. GIS**

The primary goal is to focus on getting basic GIS skills at each LTER, thus allowing sites with no GIS presence to be familiar with the benefits and those sites with divided GIS and IM professionals develop an approach to integrate their work as well as the data and information in a sustainable architecture.

Intro to GIS:

a. Benefits of GIS. Explain what GIS does. Show application examples. Discuss projects that demonstrate how GIS is used. Speak in direct and non-technical language.

b. Challenges of GIS. As with many technologies GIS can offer a solid return, but there are hardships involved. For example, in the 1980's and early 1990's, the generation of the data itself represented a significant (the bulk) investment in any GIS project...simply creating the data was a

gargantuan task. Today data is much more available, but there are gotcha's involved at every step (projections for example).

c. The key parts of a GIS/A beginning vocabulary. For example, GIS at its core is information tied to a geographic point. Show examples of different types of data, characteristics, specifications, and usage. (Raster and vector, polygons, arcs, points and databases.)

d. Core skills.

a. Importing

b. Conversion

c. Projections

d. Editing

e. Manipulation (joins, clipping, overlays, modeling)

f. Raster overview (imagery, land cover classification, DEMs, DRGs)

g. Map Making

(I'd suggest this happen in context of an example project).

e. Experts Tips. A very useful exercise would be to focus on typical 'gotcha's' that can be avoided through some basic knowledge and communication of best practices (I can't tell you how many times I've received a shp file without the requisite prj file...which leads to guessing and fumbling around with the projection. There are a number of areas where a good trainer should be able to anticipate future problems and communicate these pearls of wisdom in the classroom..."I wish I had known this when starting out".

Suggestions for a more advanced class:

a. SDE – networking/organizing/cataloging/documenting.

b. Serving GIS across the internet.

c. Land Cover classification.

#### trainingPlanning [2]

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