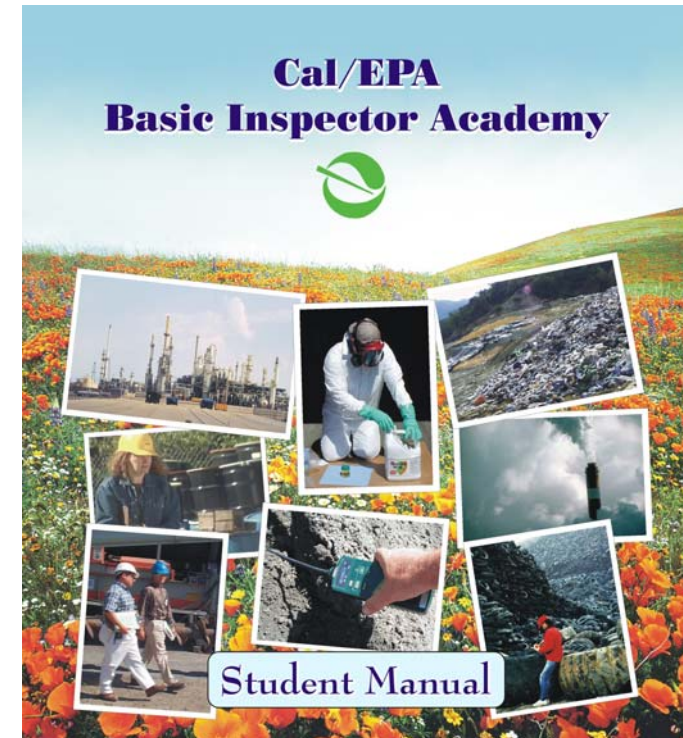


# **DEVELOPING ONLINE TRAINING**

**Mary Boyer, Chief  
Training and Compliance Assistance Branch  
Enforcement Division  
California Air Resources Board**

# Cal/EPA Basic Inspector Academy

- **Reasons to Consider Online Training**
  - Week-long course
  - 31 Instructors
  - Combination of fundamental topics and practical skills
- **Goal**
  - Decrease overall class time commitment of students
  - Focus classroom training on interactive aspects



# **COST CONSIDERATIONS**

**\*Online training is more expensive to develop, so it only pays off if:**

- The course is taught more than 8 times without changing content – CARB**
- There are excessive travel expenses because of numerous instructors**

– \* William Horton, Designing Web-Based Training

# PLANNING STAGE

- **Decided which portions appropriate to teach online (Decided on 5 modules)**
- **Got funding (Provided by Water Board)**
- **Got contractor (Decided on UC Davis Extension)**
- **Contractor development cost estimate (\$70,000 – 950 hours – 1 year)**
- **Assigned Contract Manager/SME Liaison (1 year commitment)**

# DEFINING PROJECT

- Decided to have contractor convert existing SME powerpoints to flash (ultimately used Articulate software - \$1000)
- Contractor provided sample module with:
  - Graphic design
  - Text/illustration page appearance
  - Sample student activities
- Committee agreed to approach

# CONTENT DEVELOPMENT

- **Required significant additional input by SMEs**
  - Most SMEs didn't add narrative to original powerpoints
  - Contract manager/SME liaison needed to acquire information to support powerpoint slides
- **Required revision for online**
  - Contractor and Contract manager/SME liaison condensed writing by 1/3 to 1/2 of original
  - Same teaching objectives as classroom, different teaching methods online

# PUTTING IT ONLINE

- **Needed a Learning Management System (LMS)**
  - **UCD found Moodle, free LMS**
  - **UCD customized it for us, designed look**
  - **UCD entered information, modules, tests**
  - **UCD hosted the first class on their server**
  - **Transferred to ARB's server for second class**
  - **LMS and course will be maintained by ARB**



# FINAL PRODUCT

## Created Cal/EPA Online Training Site

### Cal/EPA Online Training




#### Courses

February 2006 Cal/EPA Basic Inspector Academy  
All courses...

### Welcome to Cal/EPA Online Training

If this is your first time here, you need to establish a new account. Go to the Login box on the right hand side of the screen and click on "new account".

For more detailed information about computer technical requirements and course navigation, click on Student Orientation below.

 [Student Orientation](#)

#### Calendar

<< February 2006 >>

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

#### Available Courses

<b>February 2006 Cal/EPA Basic Inspector Academy</b>	This course is an introduction to the Cal/EPA classroom Basic Inspector Academy. This course will provide you with an
--	---

#### Login

Username:

Password:

Start now by creating a new account!

#### Tech / Admin Support



# Established a Login Procedure

Cal/EPA Online Training



New account

Cal/EPA » Login » New account

English (en) ▼

**Create a new username and password to log in with:**

Username:

Password:

**Please supply some information about yourself:**

(Note: your email address must be a real one)

Email address:

Email (again):

First name:

Surname:


City/town:

Country: United States of America ▼

You are not logged in. (Login)

# Put BIA Course on Website

## Cal/EPA Online Training



### February 2006 Cal/EPA Basic Inspector Academy

Cal/EPA » BIA\_2

#### People

- Participants
- Edit profile \*

#### Activities

- Forums
- Questionnaires
- Quizzes
- Resources

#### Administration

- Grades...
- Change password...
- Unenroll me from BIA\_2...

#### Courses

- February 2006 Cal/EPA Basic Inspector Academy
- All courses...

#### Topic outline

**Welcome to the online portion of the Cal/EPA Basic Inspector Academy!**

**This online course needs to be completed BEFORE attending the classroom portion of the course. You will receive a Certificate of Completion after completing both portions of the course.**

**Be sure to read the syllabus first, introduce yourself and, when you are ready, click on a module to begin. Notice that there is also a compilation of Cal/EPA Glossaries included for your convenience.**

#### Calendar

<< February 2006 >>

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

Global events      Course events  
Group events      User events

#### Tech / Admin Support

Contact Your Instructor

Send Message

# Included Forums for Students and Facilitator

[Subscribe to this forum](#)

## Introduce Yourself




Post a message to this forum, discussing

- (1) your current occupation and how many months/years as an inspector
- (2) your reasons for taking this course
- (3) something interesting about yourself

If you want to respond to someone else's posting, feel free to do so. This is the time for the class to "get acquainted" with one another. Just be kind! ☺

Click on "Add a new discussion topic" to create your introduction.


[Add a new discussion topic...](#)

Discussion		Started by	Replies	Last post
Hello		dianna mirzai	0	Wed, Feb 15 2006, 03:31 PM
Intrduction		Khambay Malavong	0	Tue, Feb 14 2006, 02:30 PM
Hi, my name is Harry		Harry Yee	0	Wed, Feb 8 2006, 09:53 AM

# Online Modules

## 1 Module 1: Role of the Inspector


**First view the module presentation. When you are finished take the test.**

 Role of the Inspector (approx. 20 minutes)

 Module 1 Test

## 2 Module 2: Environmental Law

**First view the module presentation. When you are finished take the test.**

 Environmental Law (approx. 25 minutes)

 Module 2 Test

## 3 Module 3: Science of Environmental Pollution

**First view both parts of the module. When you are finished take the test.**

 Science of Environmental Pollution - Part 1 (approximately 20 minutes)

 Science of Environmental Pollution - Part 2 (approximately 40 minutes)

 Module 3 Test

#### 4 **Module 4: Agencies' Roles and Responsibilities**



**First view the 7 sections of the module. When you are finished take the test.**

-  Agencies' Roles and Responsibilities - Overview (approx. 9 minutes)
-  Agencies' Roles and Responsibilities - Air (approx. 7 minutes)
-  Agencies' Roles and Responsibilities–Non-hazardous Waste (app. 8 min.)
-  Agencies' Roles and Responsibilities–Hazardous Chemicals (app. 12 min.)
-  Agencies' Roles and Responsibilities – Pesticides (approx. 9 minutes)
-  Agencies' Roles and Responsibilities – Water (approximately 6 minutes)
-  Agencies' Roles and Responsibilities – Health (approximately 8 minutes)
-  Module 4 Test

#### 6 **Module 5: Health and Safety**



**First view the module presentation. When you are finished take the test.**

-  Field Inspection Health and Safety (approximately 10 minutes)
-  Module 5 Quiz

# MODULE ELEMENTS

# Each Module is a MOVIE



Cal/EPA Module 4.4 - Hazardous Chemicals ATTACHMENTS

Outline    Thumbnails    Search

- 1. Agencies Involved With Hazardous Chemicals
- 2. Definitions of Hazardous Chemicals
- 3. Hazardous Materials During Transportation
- 4. Hazardous Materials During Handling
- 5. Hazardous Waste
- 6. Hazardous Substances
- 7. Hazardous Chemicals— Scope of the Problem
- 8. Who Does What?
- 9. Federal Agencies
- 10. State Agencies
- 11. Agency Involvement, Toxic or Hazardous Chemicals
- 12. CUPAs
- 13. CUPAs
- 14. CUPA coordination
- 15. Other Agencies Supporting CUPAs
- 16. Laws and Regulations
- 17. Enforcement Programs
- 18. Activity
- 19. Hazardous Chemical Agencies Activities
- 20. To Learn More
- 21. Take a Look Around

## Module 4 – Hazardous Chemicals

### Agencies Involved With Hazardous Chemicals



articulate  
POWERED PRESENTATION

SLIDE 1 OF 21    PAUSED    00:05 / 00:08

NOTES

Internet

# With Graphic Explanations and Narration

Module 3 - Science of Environmental Pollution, Part 1

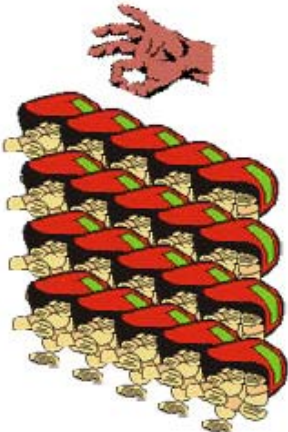
ATTACHMENTS

Outline Thumbnails Search


1. Introduction
2. Objectives
3. Science of Environmental Pollution
4. Cycles of Change on Earth - Biosphere
5. Light and Temperature Cycles
6. Oxygen Cycle
7. Water Cycle
8. Carbon Cycle
9. Nitrogen Cycle
10. Effects of Humans on Our Environment
11. Urbanization
12. Agricultural Practices
13. Burning Fossil Fuels
14. Waste Accumulation
15. Chemicals in Manufacturing
16. Tracking Substances in our Environment
17. Interactive Exercise
18. Interactive Exercise
19. Pollutants
20. How much is a part per million?
21. How much is a part per billion?
22. Pollutant
23. Fate - Chemical Stability
24. Pollutant Transport
25. Pollutant Source
26. Bioaccumulation

## Module 3 – Science of Environmental Pollution

How much is a part per million?



A pinch of salt in 20 lbs of potato chips



Four drops of ink in a 55-gallon drum

articulate POWERED PRESENTATION

SLIDE 20 OF 27 PAUSED 00:07 / 00:09

NOTES



# Student Activities


Environmental Law Module 2 | ATTACHMENTS

Outline Thumbnails Search

1. Introduction
2. What are the Sources of Law?
3. Sources of Statutes
4. Codifying Statutes
5. Finding Statutes
6. Regulations
7. State Regulation Development
8. Local Laws and Regulations
9. Hierarchy of Sources of Law
10. Websites for Interactive Exercise
11. Environmental Laws
12. How Long?
13. History, CA Environmental Laws
14. History, CA Environmental Laws
15. History, CA Environmental Laws
16. Lasting Environmental Damage
17. Water Pollution Law
18. Historical Air Pollution Events
19. Historical Air Pollution Events
20. Historical Air Pollution Events
21. Historical Air Pollution Events
22. California's Air Program
23. In California, Local Environmental Re
24. "Resources" vs. "Environment"
25. California's Unique Challenges
26. Test Time

## Module 2 - Environmental Law

### Websites for Interactive Exercise



#### California Regulations

- [www.oal.ca.gov](http://www.oal.ca.gov)

#### Statutes

- [www.law.cornell.edu/uscode](http://www.law.cornell.edu/uscode) (Federal)
- [www.leginfo.ca.gov/calaw.html](http://www.leginfo.ca.gov/calaw.html) (California)

#### Pending Legislation

- [www.epa.gov/epahome/rules.html](http://www.epa.gov/epahome/rules.html) (Federal)
- <http://www.leginfo.ca.gov/>(California)

Interactive Exercise

Press the *Play* button below to continue

articulate POWERED PRESENTATION

SLIDE 10 OF 26 PAUSED 00:11 / 00:20

NOTES

# Informal Quizzes

Cal/EPA Module 4.4 - Hazardous Chemicals ATTACHMENTS

Outline   Thumbnails   Search

- 1. Agencies Involved With Hazardous C
- 2. Definitions of Hazardous Chemicals
- 3. Hazardous Materials During Transpo
- 4. Hazardous MaterialsDuring Handling
- 5. Hazardous Waste
- 6. Hazardous Substances
- 7. Hazardous Chemicals– Scope of the
- 8. Who Does What?
- 9. Federal Agencies
- 10. State Agencies
- 11. Agency Involvement, Toxic or Haze
- 12. CUPAs
- 13. CUPAs
- 14. CUPA coordination
- 15. Other Agencies Supporting CUPAs
- 16. Laws and Regulations
- 17. Enforcement Programs
- 18. Activity
- 19. Hazardous Chemical Agencies Acti
- 20. To Learn More
- 21. Take a Look Around

## Hazardous Chemical Agencies 4.4

Question 1 of 4: Point Value: 10

Establish Requirements for Gasoline Storage Tank Leak Protection.

- CUPA
- DTSC
- CIWMB
- SWRCB

Score so far: 0 points out of 0

articulate  
POWERED PRESENTATION

SLIDE 19 OF 21   PLAYING   00:00 /

NOTES

# With Self Assessment

Cal/EPA Module 4.4 - Hazardous Chemicals ATTACHMENTS

Outline   Thumbnails   Search

- 1. Agencies Involved With Hazardous C
- 2. Definitions of Hazardous Chemicals
- 3. Hazardous Materials During Transpo
- 4. Hazardous MaterialsDuring Handling
- 5. Hazardous Waste
- 6. Hazardous Substances
- 7. Hazardous Chemicals- Scope of the
- 8. Who Does What?
- 9. Federal Agencies
- 10. State Agencies
- 11. Agency Involvement, Toxic or Haze
- 12. CUPAs
- 13. CUPAs
- 14. CUPA coordination
- 15. Other Agencies Supporting CUPAs
- 16. Laws and Regulations
- 17. Enforcement Programs
- 18. Activity
- 19. Hazardous Chemical Agencies Acti
- 20. To Learn More
- 21. Take a Look Around

## Hazardous Chemical Agencies 4.4

### Quiz Results

Your Score :	0% (0 points)
Passing Score :	80% (32 points)

**Result :**

You did not pass. Try again.

Review Quiz Finish

articulate  
POWERED PRESENTATION

SLIDE 19 OF 21   PLAYING   00:00 /

NOTES

# And a Test for Each Module

Environmental Law Module 2 ATTACHMENTS

Outline   Thumbnails   Search

- 1. Introduction
- 2. What are the Sources of Law?
- 3. Sources of Statutes
- 4. Codifying Statutes
- 5. Finding Statutes
- 6. Regulations
- 7. State Regulation Development
- 8. Local Laws and Regulations
- 9. Hierarchy of Sources of Law
- 10. Websites for Interactive Exercise
- 11. Environmental Laws
- 12. How Long?
- 13. History, CA Environmental Laws
- 14. History, CA Environmental Laws
- 15. History, CA Environmental Laws
- 16. Lasting Environmental Damage
- 17. Water Pollution Law
- 18. Historical Air Pollution Events
- 19. Historical Air Pollution Events
- 20. Historical Air Pollution Events
- 21. Historical Air Pollution Events
- 22. California's Air Program
- 23. In California, Local EnvironmentalRe
- 24. "Resources" vs. "Environment"
- 25. California's Unique Challenges
- 26. Test Time

## Module 2 - Environmental Law

**TEST TIME!**

Module 2 Test  
Attempt 4

The results page will list all 20 questions in order to assist in the comprehension of the course.  
The items you need to learn are in bold.

1. As an inspector for your particular agency, you would **not** have a direct role in:  
Answer:  A. Finding out businesses regulated by your agency's standards  
 B. Issuing other agency regulations  
 C. Inspecting your agency  
 D. Promulgating local health and environmental regulations

2. The success of the CAGP's Best Inspector Academy will be based on:  
Answer:  A. Addressing the current business  
 B. Concentrating on performance expectations  
 C. Identifying viable market funding  
 D. Using media awareness  
 E. Both A and B

3. A test of the:  
Answer:  A. Controlling before being in office  
 B. Maintaining a neutral stance and react in a critical situation  
 C. Addressing customer satisfaction problems  
 D. An ethics issue

4. An example of the Law engine from that given in the course, the inspector does not employ:  
Answer:  A. Finding out regulated businesses  
 B. Finding out businesses in compliance  
 C. Determining a specific engineering status  
 D. Determining compliance with the standard

5. Your job as an Inspector is to:  
Answer:  A. Promote engineering safety  
 B. Inspect facilities  
 C. Assist your authority  
 D. Promote compliance and safety  
 E. All of the above

[Close Window](#)

- Click on X to close Module 2
- Select "Module 2 Test"

articulate POWERED PRESENTATION

SLIDE 26 OF 26   PAUSED   00:18 / 00:20

NOTES

# Students Take a Test

Logout

Cal/EPA Online Training



February 2006 Cal/EPA Basic Inspector Academy  
Cal/EPA » BIA\_2 » Quizzes » Module 3 Test » Attempt 1

## Module 3 Test

### Attempt 1

You need to pass each test with a **70%** pass rate in order to qualify for the classroom portion of this course.

That means you must score **18 or higher** on this test.

**1** This product of decomposition has an unpleasant odor.

1 Marks

- Answer:  a. carbon monoxide  
 b. hydrogen sulfide  
 c. methane  
 d. methyl mercury

**2** An example of bioconversion is:

- Answer:  a. increasing concentrations of DDT as it travels up the food

# Get Feedback

8

Particulate matter the diameter of a human hair can be inhaled into the lungs

Marks: 0/1

Answer:  True  False

**INCORRECT. Human hair is approximately 60 micrometers in diameter. Particles that large are trapped by the respiratory system before they reach the lungs. Particles must be 10 micrometers or smaller to reach the lungs.**

9

Sediment is not a pollutant unless it contains a harmful chemical.

Marks: 1/1

Answer:  True  False

**CORRECT! Sediment itself can be harmful in water bodies by increasing water temperature, changing the depth of river channels, and damaging fish spawning grounds.**

10

A temperature inversion can promote:

Marks: 0/1


- Answer:
- a. photochemical smog production
  - b. dispersal of a pesticide for miles horizontally
  - c. eutrophication of a stream

**You are partly right. A temperature inversion can promote the dispersal of a pesticide in the air close to the ground.**

# And Their Score

< Jump to... >

**Cal/EPA Online Training**



February 2006 Cal/EPA Basic Inspector Academy  
Cal/EPA » BIA\_2 » Quizzes » Module 3 Test

### Module 3 Test

You need to pass each test with a **70%** pass rate in order to qualify for the classroom portion of this course.  
That means you must score **18 or higher** on this test.

Attempt	Time taken	Completed	Grade / 25
1	1 min 42 secs	Thursday, February 16 2006, 11:32 AM	0.0
2	26 secs	Thursday, February 16 2006, 11:37 AM	<b>8.0</b>

The quiz is available until: Friday, March 17 2006, 09:55 PM

**Highest grade: 8 / 25.**

Attempt quiz now

# ADMINISTRATIVE OPTIONS

## View Activity Summary of a Student

The screenshot shows a web browser window with the title "Cal/EPA Online Training". The page content includes a navigation breadcrumb: "February 2006 Cal/EPA Basic Inspector Academy > Cal/EPA > BIA\_2 > Logs > Mary Miller, All days". Below this is a heading: "February 2006 Cal/EPA Basic Inspector Academy: Mary Miller, All days (GMT-6)".

There are three dropdown menus for filtering: "February 2006 Cal/EPA Basic Inspector Academy", "Mary Miller", and "All days". Below these is another dropdown menu set to "All activities" and a "Show these logs" button.

The text "Displaying 15 records" is centered above a table of activity logs. The table has columns for date and time, IP address, user name, activity type, and resource name.


Date/Time	IP Address	User Name	Activity	Resource
Tue February 14 2006, 05:48 PM	146.114.192.201	Mary Miller	quiz submit	Module 1 Test
Tue February 14 2006, 05:46 PM	146.114.192.201	Mary Miller	quiz attempt	Module 1 Test
Tue February 14 2006, 05:46 PM	146.114.192.201	Mary Miller	quiz view	Module 1 Test
Tue February 14 2006, 05:25 PM	146.114.192.201	Mary Miller	resource view	Role of the Inspector (approx. 20 minute
Tue February 14 2006, 05:24 PM	146.114.192.201	Mary Miller	resource view	Cal/EPA Agencies' Glossaries
Tue February 14 2006, 05:24 PM	146.114.192.201	Mary Miller	resource view	READ THIS FIRST! BIA Course Syllabus
Tue February 14 2006, 05:24 PM	146.114.192.201	Mary Miller	resource view	READ THIS FIRST! BIA Course Syllabus
Tue February 14 2006, 05:21 PM	146.114.192.201	Mary Miller	resource view	READ THIS FIRST! BIA Course Syllabus
Tue February 14 2006, 05:21 PM	146.114.192.201	Mary Miller	resource view	READ THIS FIRST! BIA Course Syllabus
Tue February 14 2006, 05:21 PM	146.114.192.201	Mary Miller	questionnaire view all	
Tue February 14 2006, 05:20 PM	146.114.192.201	Mary Miller	forum view forums	
Tue February 14 2006, 05:19 PM	146.114.192.201	Mary Miller	user view	Mary Miller



# ADMINISTRATIVE OPTIONS

## View Students' Grades








Cal/EPA Online Training



February 2006 Cal/EPA Basic Inspector Academy  
Cal/EPA » BIA\_2 » Grades

### Grades

[Download in Excel format](#) [Download in text format](#)

	First name	Last name	<input checked="" type="checkbox"/> Module 1 Test Max: 5	<input checked="" type="checkbox"/> Module 2 Test Max: 7	<input checked="" type="checkbox"/> Module 3 Test Max: 25	<input checked="" type="checkbox"/> Module 4 Test Max: 34
	John	Bell	5	6	21	
	Armen	Kamian	5	5		
	Khambay	Malavong	5	5		
	Jacqueline	Matthews				
	Mary	Miller	5			
	dianna	mirzai	5			
	Jeffrey	Pyle	5	6	23	31

# COURSE EVALUATION

- **Evaluation Form**

7	<p><b>Please complete this Evaluation Form. Your feedback is very important to us!</b></p> <p><input type="checkbox"/> Evaluation Form</p>	<input type="checkbox"/>
---	--	--------------------------

# Student Completes Evaluation

**Cal/EPA Online Training**



February 2006 Cal/EPA Basic Inspector Academy  
Cal/EPA » BIA\_2 » Questionnaires » Evaluation Form

Open a printable window

## Course Evaluation

Questions marked with a \* are required.

\*1. The course as a whole was:

- Excellent
- Good
- Fair
- Poor

\*2. The course content was:

- Excellent
- Good
- Fair

# Evaluation Summary



## Course Evaluation

### 1. The course as a whole was:

Excellent	28.6%	(4)
Good	71.4%	(10)
Fair		(0)
Poor		(0)
<b>TOTAL</b>	<b>100.0%</b>	<b>14</b>

### 2. The course content was:

Excellent	50.0%	(7)
Good	35.7%	(5)
Fair	14.3%	(2)
Poor		(0)
<b>TOTAL</b>	<b>100.0%</b>	<b>14</b>

### 3. The effectiveness of the delivery format was:

Excellent	50.0%	(7)
Good	42.9%	(6)
Fair	7.1%	(1)
Poor		(0)

# OUR EXPERIENCE

- **Challenges of online training**
  - **Requires ongoing computer support**
    - **Website, LMS, and Server**
    - **Technical Support if Students have problems**
  - **Requires expensive software/sound equipment for development and editing**
  - **Our SMEs did not have time to fill in narrative in their powerpoint presentations**
  - **Our contractor lacked scientific knowledge to edit content**

# OUR EXPERIENCE

- **Benefits of online training**
  - Contractor provided graphic design, course design, LMS choice, software choice, guidance when transferred project to ARB server
  - Reduced instructors needed for classroom portion from 31 to 15
  - Saved travel costs of 16 instructors
  - Allowed students to learn the fundamental topics at their own pace
  - Allowed classroom training to focus on practical skills

# CONCLUSIONS

- **Don't think you are going to save time or money with online training**
- **Carefully choose subject matter to teach online**
- **Research online course development options before selecting software**
- **Spend time designing course in order to keep student online engaged**

**QUESTIONS ?**