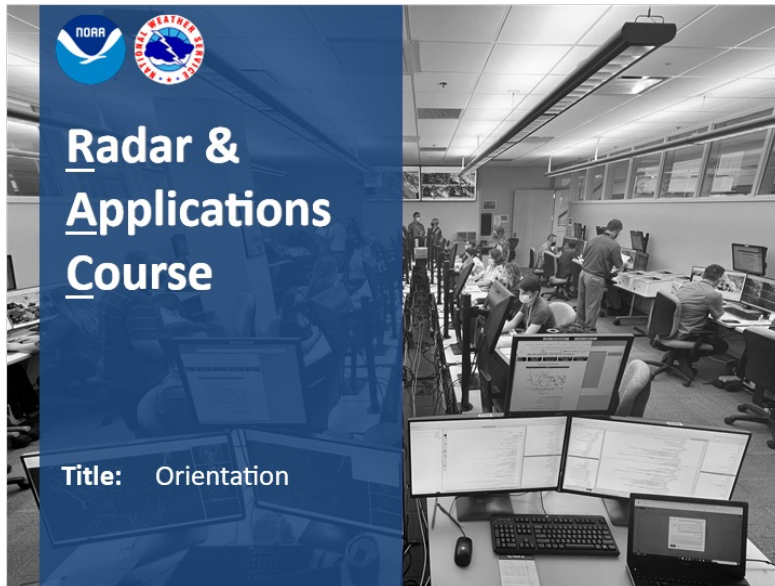


Radar & Applications Course (RAC): Orientation

1. Overview, Motivation, History

1.1 Title



Notes:

Welcome to the Radar & Applications Course (RAC) conducted by the National Weather Service (NWS) Operations Training Unit (OTU).

1.2 Overview

Overview

"The purpose of RAC is to train NWS forecasters (meteorologists and hydrologists) on the use of the WSR-88D radar in the forecast and warning decision making process"

- Motivation
- History of this course
- Commerce Learning Center (CLC)
- WES-2 Bridge
- Quizzes and Instructor-Led Teletraining (ILT) sessions
- Course content
- Training facilitator responsibilities
- Support

Notes:

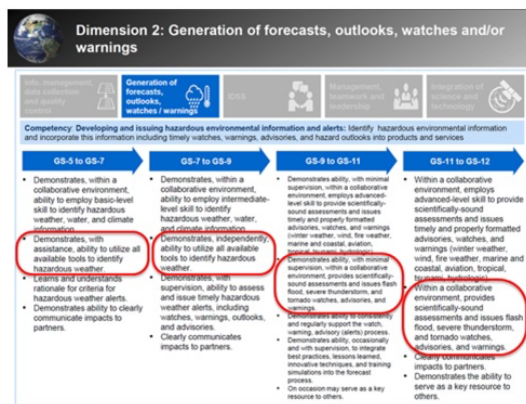
The purpose of RAC is to train NWS forecasters (meteorologists and hydrologists) on the use of the WSR-88D radar in the forecast and warning decision making process.

Here is an overview of this presentation. Please take a moment to review it.

1.3 Motivation

Motivation

Completion is necessary for career advancement in the NWS GS 5-12 1340 Competency-Based Model



Notes:

RAC is important because its training is necessary for career advancement in the National

1.4 History of This Course

History of This Course



- WSR-88D Operations Course
 - 1990-97
 - 3.5 week in-residence course in Norman
- Distance Learning Operations Course (DLOC)
 - 1997-2015
 - 100+ hours of training
 - 1-week workshop
 - Boulder (2000-2004)
 - Norman (2005-present)
- Radar & Applications Course (RAC)
 - 2015-Present

Notes:

This course has steadily evolved over the years, but the focus has always been on the use of the WSR-88D in operations, particularly warning operations. It began in 1990 as the WSR-88D Operations Course which was taught as a 3 & 1/2 week in-residence course in Norman, Oklahoma. In 1997, it transitioned into the Distance Learning Operations Course (DLOC) and provided a blended learning approach which included web-based training, on-line modules, teletraining, and a 1-week workshop delivered at its conclusion. The name was changed to the Radar & Applications Course (RAC) in 2015 to provide a more accurate and meaningful description of the course.

2. CLC & WES-2 Bridge


2.1 Commerce Learning Center (CLC)

Commerce Learning Center (CLC)

- Completion status tracked via the CLC
 - Lesson quizzes
 - WES activities
 - Instructor-led training (ILT)

Point of Contact:
Andrew.C.Wood@noaa.gov
Phone: 1-405-325-3005

<https://doc.csodfed.com>



Title	Due Date	Action
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum
AWIPS 2.0 (100)	10/15/2017	Open Curriculum

Notes:

We use the Commerce Learning Center (CLC) to track your completion of each part of the RAC: Lesson quizzes, WES activities, and ILTs. We recommend you bookmark the web address. Most of the lessons are on-line training that you will launch directly from the CLC. Other training (such as AWIPS Warning Fundamentals) will be taken via WES in the Cloud, but you will need to come back to the CLC and take some action in order to show up as complete. Your point of contact is Andy Wood. If you have any questions about the CLC (or specifics about what you see on your transcript), please feel free to reach out to him.

Commerce Learning Center (CLC) - Copy (Slide Layer)

Commerce Learning Center (CLC)

- Completion status tracked via the CLC
 - Lesson quizzes
 - WES activities
 - Instructor-led training (ILT)

Point of Contact:
Andrew.C.Wood@noaa.gov
Phone: 1-405-325-3005

<https://doc.csodfed.com>




2.2 Commerce Learning Center (CLC): RAC Curricula

Commerce Learning Center (CLC): RAC Curricula

- Register for teletraining
- Track your progress

<https://doc.csodfed.com>




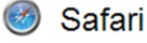

RAC Curriculum on your transcript

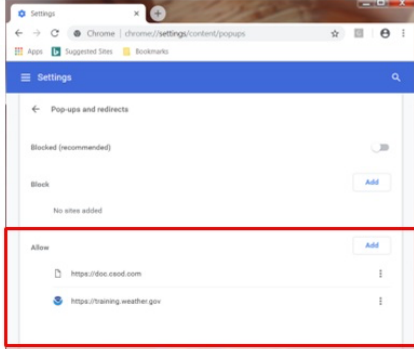
Notes:

Your RAC Curriculum is your path to course completion. Use it to register for teletraining sessions and track your progress. It's not uncommon for completions to take a few minutes to register on your transcript in the CLC. If it has been 15 minutes or longer and a completion doesn't show up, please let us know.

2.3 Commerce Learning Center (CLC): Optimizing Use

Commerce Learning Center (CLC): Optimizing Use

- Preferred browsers
 - 
 - 
 - 
- Either turn off popup blocker or whitelist both the CLC and WDTD



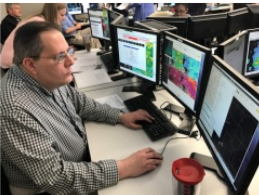
Notes:

Google Chrome, Microsoft Edge, and Safari should all work effectively with the CLC.


If you have popup blockers on, you will not see the presentations appear when you select them unless you create an exception for the CLC and WDTD (now OTU) web sites.

2.4 WES-2 Bridge Transition (Weather Event Simulator for AWIPS-2)

WES-2 Bridge Transition (Weather Event Simulator for AWIPS-2)



Point of Contact:
Dale.A.Morris@noaa.gov
Phone: 1-405-325-3008



- WFOs share "WFOcluster" cloud instances with 5-6 neighbors
- RAC students cannot start or stop the WFOcluster instances
- Coordinate with your facilitator or WES point-of-contact for WFOcluster access/URL/login credentials
- OTU provides access to other instances (mainly Hazard Services)

Notes:

WES-2 Bridge is a weather event simulator for AWIPS-2. You will use it during both the distance learning and in-residence Workshop lab portions of RAC. Your point of contact for WES-2 Bridge support is Dale Morris.



The WES is transitioning to the cloud, and WFOs share a “WFOCluster” instance for taking the majority of the WES training in RAC. Your training facilitator provides access to your “WFOCluster” machine when you need it, and OTU will provide access to other instances for mainly Hazard Services-related training.

3. Quizzes and ILTs

3.1 Types of Training Modes

Types of Training Modes

- Web modules
 - Completed asynchronously
- Live, instructor-led-teletraining (ILT) sessions
- WES-2 Bridge practice exercises
 - Practice applying knowledge you've learned in real-world settings



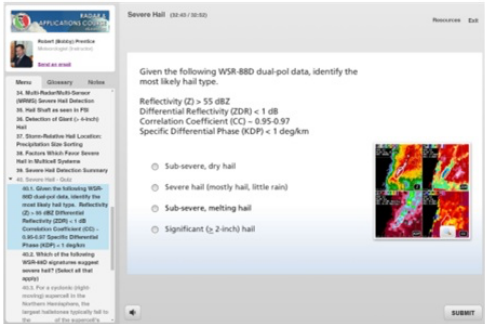
Notes:

RAC presents training material in various ways. Some are self-paced modules on the Internet, while others are recorded lessons where the instructor’s voice is paired with the relevant images. Another method is via live teletraining session where you and your classmates go through material together with an instructor. You must pre-register for each teletraining session via the RAC curriculum in the CLC and take it at the scheduled time.

3.2 End-of-Lesson Quizzes

End-of-Lesson Quizzes

- Must be completed on the Commerce Learning Center (CLC)
- Passing score is 70-80%



The screenshot shows a quiz interface. On the left, there is a list of questions with a selected question highlighted: "61.5. Given the following WSR-88D dual-pol data, identify the most likely hail type. Reflectivity (Z) - 55 dBZ, Differential Reflectivity (ZDR) < 1 dB, Correlation Coefficient (CC) - 0.95-0.97, Specific Differential Phase (KDP) < 1 deg/km". On the right, the question text is displayed along with a radar image showing reflectivity and differential reflectivity. Below the question, there are four radio button options: "Sub-severe, dry hail", "Severe hail (mostly hail, little rain)", "Sub-severe, melting hail", and "Significant (> 2 inch) hail". A "SUBMIT" button is at the bottom right.


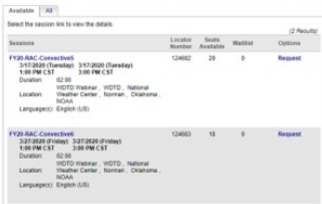
Notes:

Even though RAC lessons are available via our web page, End-of-Lesson Quizzes must be completed on the Commerce Learning Center (CLC) to receive completion credit. Passing score is 70-80%.

3.3 Instructor-Led-Teletraining (ILT): Overview

Instructor-Led-Teletraining (ILT): Overview

1. Register for the Instructor-Led-Training (ILT) sessions of your choice in your CLC curriculum.
 - Each student must register individually to receive credit
 - Register at least 24 hours in advance
2. Register for the accompanying GoogleMeet webinar
 - Use instructions in your "Approval" Email sent by the CLC

Notes:

Teletraining means we train live over the internet. The registration steps are:

1. Register for the instructor-led training (ILT) session of your choice in your Commerce Learning Center (CLC) curriculum. Each student must register individually to receive credit in the CLC, even if multiple students from the same office attend the same session. Register at least 24 hours in advance. You should promptly receive an e-mail with a subject starting with "Register Info" and the RAC Help email address (nws.wdtd.rachelp@noaa.gov). If you do not get that e-mail within 15 minutes of registering, please let us know.
2. Register for the accompanying Google Meet webinar using instructions in your "Approval" Email sent by the CLC.

3.4 Instructor-Led-Teletraining (ILT): Protocol

Instructor-Led-Teletraining (ILT): Protocol

- Dedicate time for your webinar
 - *"Do not disturb!"*
- Expect interaction
 - *Direct questions*
 - *Quiz questions*
 - *Annotate features*



Notes:

During teletraining webinars, dedicate undisturbed time for your session and expect interaction.

4. Course Content

4.1 RAC Tracks: Meteorologist vs Hydrologist

RAC Tracks: Meteorologist vs Hydrologist	
Orientation	MET, HYDRO
Introduction to the WSR-88D	MET, HYDRO
Principles of Doppler Radar	MET, HYDRO
Base and Derived Products	MET, HYDRO
Products Interpretation	MET, HYDRO
Multi-Radar/Multi-Sensor (MRMS) Products	MET
AWIPS Convective Warning Fundamentals: Hazard Services	MET
Convective Storm Structure and Evolution*	MET
<small>Note: AWIPS Convective Warning Fundamentals should be completed before the Applied Performance Drills</small>	
Flash Floods	MET, HYDRO*
<small>Note: Online material for this topic should be completed before the Flash Flood Applied Performance Drills</small>	<small>*optional</small>
Storm-Based Warning Fundamentals	MET
Humans in the Warning Process	MET
Workshop Primer	MET
Workshop (Norman, OK)	MET

Notes:

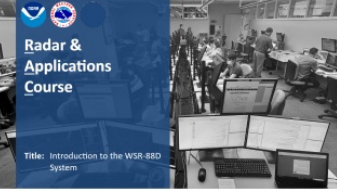
Let's discuss the RAC topics. You should complete them in order since they build on each other.

Most RAC students are Meteorologists who have been assigned to the Meteorologist Track, but about 6% are Hydrologists who have been assigned to the Hydrologist Track.

4.2 Topic: Introduction to the WSR-88D System

Topic: Introduction to the WSR-88D System

- Overall system description covering equipment groups
- Delivery Method
 - Instructor guided web module
- Completion Time
 - 1 hour



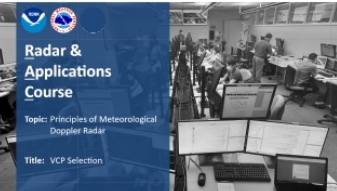
Notes:

The Introduction to the WSR-88D System topic is a self-guided, narrated, web module that discusses the overall system description and covers the equipment groups. Completion time is about one hour.

4.3 Topic: Principles of Meteorological Doppler Radar

Topic: Principles of Meteorological Doppler Radar

- How the WSR-88D collects, quality controls, and processes data into products
- Delivery Method
 - Instructor guided web modules
- Completion Time
 - 7 hours



Notes:

The Principles of Meteorological Doppler Radar topic consists of instructor guided web modules which cover how the WSR-88D collects, quality controls, and processes data into products. Completion time is about seven hours.

4.4 Topic: Base and Derived Products

Topic: Base and Derived Products

- Covers products and the algorithms that generate them
- Delivery method
 - Instructor guided web modules
- Completion time
 - 8 hours



Notes:

The Base and Derived Products topic covers products and the algorithms that generate them. Delivery method consists of instructor guided web modules. Completion time is about eight hours.

4.5 Topic: Products Interpretation

Topic: Products Interpretation

- How to use base and derived products to interpret patterns & signatures
- Delivery method
 - Instructor guided web modules
 - Instructor Led Training (ILT) webinar
- Completion Time
 - 4 hours



Notes:

The Products Interpretation topic consists of various lessons on using base & derived

products to interpret patterns and signatures in radar data. Delivery method consists of both instructor guided web modules and an instructor led training webinar. Completion time is about four hours.

4.6 Topic: MRMS Products

Topic: MRMS Products

- Covers the various Multi-Radar/Multi-Sensor (MRMS) products
- These lessons will discuss:
 - Available products
 - Key specifications of those products
 - How they get generated
- Delivery method
 - On-line training modules
- Completion time
 - 3 hours



Notes:

The MRMS Products topic covers the various Multi-Radar/Multi-Sensor (MRMS) products that are available to National Weather Service forecasters at their WFO via the Satellite-Based network (SBN). These lessons will discuss the available products, key specifications of those products, and some relevant information on how they get generated. Delivery method is on-line training modules. Completion time is three hours.

4.7 Hazard Services

Hazard Services

1. Hazard Services training (3-4hrs)
 - Scheduled with Cloud Automated Scheduler (CLAS)
 - **not** WFOcluster
 - Student instructions (follow CLC)
2. Hazard Services Proficiency Exam (1-2hrs)

Must complete before the Flash Flood Topic's Applied Performance Drills

Hazard Information

HZ-2020-RAH-GRB-100213.FF.W.Connective

Type: Hydrology

Category: Hydrology

Type: Flash Flood Warning (FF.W.Connective)

Drawing: Update Hazard Hatched Area

Time Range:

Start: 06-Feb-2020 19:22

End: 06-Feb-2020 22:30

Duration: 3 hrs

Details:

Flash flooding occurring

Back location:

Rain so far:

Unknown

Between 1.0 and 3.0 inches of rain have fallen

Expected Rainfall Rate:

Unknown

0.00 to 0.00 inch(es) in 0.0 hour(s) 0.0

Preview... Propose

Notes:

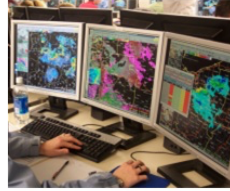
The Hazard Services training and proficiency test will introduce you to Hazard Services. The cloud instances for both the Hazard Services-related training and exam do NOT use your WFOcluster cloud machine. They are scheduled by the student using WDTD's Cloud Automated Scheduler (CLAS). See your email and your transcript for the links to the student instructions doc.

Because the Flash Flood Applied Performance Drills uses Hazard Services to issue a flash flood warning, the Hazard Services training needs to be taken before the Flash Flood Applied Performance Drills.

4.8 Hazard Services Proficiency Test

Hazard Services Proficiency Test

- Demonstrate Hazard Services proficiency
 - Assignment in CLC
 - Administered by training facilitator
- Score of at least 70% required
 - Retake at discretion of training facilitator
 - Training facilitator: Scan and email
Michael.Lowe@noaa.gov and Samantha.Boyd@noaa.gov



Notes:

The Hazard Services proficiency test is similar to the AWIPS proficiency test that you previously took in the Fundamentals of AWIPS Course and will be proctored by the facilitator.

You will see it listed as an assignment in the CLC. It is a timed, paper exam administered by your training facilitator that takes approximately 1 to 2 hours. The facilitator will observe your performance of specific Hazard Services tasks.

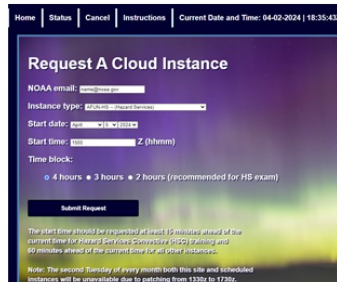
You will need to achieve a passing score of at least 70% on the test to receive credit. You may retake the test at the discretion of your training facilitator.

After completing the exam your training facilitator simply scans the graded test and email it to Mike Lowe and Samantha Boyd. They will then enter the score in the CLC.

4.9 Cloud Automated Scheduler (CLAS)

Cloud Automated Scheduler (CLAS)

1. For Hazard Services training/exam & Flash Flood Applied Performance Drills
 - [Instructions](#) provided in CLC
 - Students request cloud time with CLAS
 - Download login information into Google Calendar
 - FAQ & Support: nws.wdtd.awips@noaa.gov



The screenshot shows a web interface for requesting a cloud instance. At the top, there are navigation links: Home, Status, Cancel, Instructions, and Current Date and Time: 06-02-2024 | 18:35:43Z. The main heading is "Request A Cloud Instance". Below this, there are several input fields: "NOAA email:" with a text input, "Instance type:" with a dropdown menu, "Start date:" with a date picker, and "Start time:" with a time picker. Below the time picker is a "Time block:" section with radio button options for "4 hours", "3 hours", and "7 hours (recommended for HS exam)". A "Submit Request" button is located below the form. At the bottom, there is a note: "The start time should be requested at least 10 minutes ahead of the current time for Hazard Services Connect (HS) training and 90 minutes ahead of the current time for all other instances... Note: The second Tuesday of every month both this site and scheduled instances will be unavailable due to patching from 1200z to 1700z."

Notes:

WDTD will serve certain Hazard Services-specific training using WDTD's Cloud Automated Scheduler (CLAS). This will be for the Hazard Services training, exam, and the Flash Flood Applied Performance Drills that use Hazard Services to issue a flash flood warning. Students follow their CLC instructions to request cloud time with CLAS and download the login information to take the training and practice with CAVE.

There is a frequently asked questions doc for troubleshooting common cloud/WES problems, and if you run into any problems not solved by the FAQ, email nws.wdtd.awips@noaa.gov for support.

4.10 Topic: Convective Storm Structure and Evolution

Topic: Convective Storm Structure and Evolution

- Thunderstorms and all things severe
- Delivery method
 - Instructor guided web modules
 - Applied Performance Drills on WFOCluster
 - Instructor-Led-Teletraining session
- Completion time
 - 12 hours



Notes:

The Convective Storm Structure and Evolution topic covers thunderstorms and all things severe. Delivery method is instructor guided web modules, Applied Performance Drills taken on the WFOCluster, and an Instructor-Led-Teletraining (ILT) webinar. This is the longest topic; completion time is about twelve hours.

4.11 Topic: Flash Floods

Topic: Flash Floods

- Covers concepts, products and tools useful for flash flood forecasting and decision-making
- Delivery method
 - Instructor guided web modules
 - Instructor-Led-Teletraining (ILT) webinar
- Completion time
 - 3 hours (modules) + 2 hours (ILT)




Notes:

The Flash Floods topic consists of instructor guided web modules which cover concepts, products and tools useful for flash flood forecasting and decision-making. There will also be an Instructor-Led-Teletraining (ILT) webinar. Completion time is approximately three hours for the modules and 2 hours for the ILT.

4.12 Topic: Flash Floods (Cont'd)

Topic: Flash Floods (Cont'd)

- Flash Flood Applied Performance Drills
- Delivery method
 - In the cloud
 - Take before your ILT
- Completion time
 - 3-4 hours



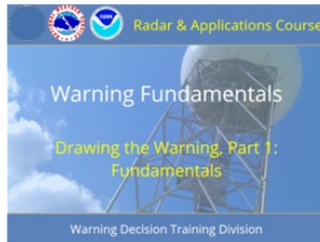
Notes:

Along with the Hazard Services training, we have Flash Flood Applied Performance Drills that are taken in the cloud. These should be taken before your ILT. The completion time for the Flash Flood APDs is between 3 to 4 hours.

4.13 Topic: Warning Fundamentals

Topic: Warning Fundamentals

- Provides the fundamental knowledge and skills required to issue effective storm-based warnings.
 - WarnGen
 - Recommended strategies for polygon creation and placement
- Delivery Method
 - Instructor guided web modules
 - Instructor-Led-Teletraining (ILT) webinar
- Completion time
 - 4.5 hours



Notes:

The Warning Fundamentals topic provides the fundamental knowledge and skills required to issue effective storm-based warnings. Training includes skills for basic proficiency in using some AWIPS storm analysis applications such as WarnGen and recommended strategies for polygon creation and placement. Delivery method is instructor guided web modules and an Instructor-Led-Teletraining webinar. Completion time is about five and a half hours.

4.14 Topic: Humans in the Warning Process

Topic: Humans in the Warning Process

- Covers:
 - The human side of warning operations
 - The importance of team communication
 - Addressing your health during the warning process
- Delivery Method
 - Instructor guided web modules
- Completion time
 - 1 hour



Notes:

The Humans in the Warning Process lesson covers the human side of warning operations, the importance of team communication, and addressing your health during the warning process. Delivery Method is Instructor guided web modules. Completion time is one hour.

4.15 Workshop Primer

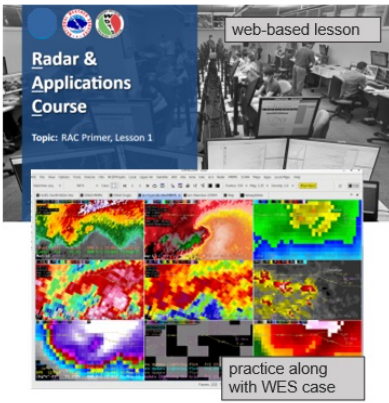
Workshop Primer

What: Severe (2-3hrs)

Why: Workshop catalyst
Puts it all together
Uses RAC procedures

When: Week before the workshop...not earlier

How: Take RAC Primer on WFO Cluster and then complete final assignment by noon CT Friday before workshop



Point of contact:
jessica.bunker@noaa.gov

Notes:

One very important exercise that will help prepare you for the week of simulation nirvana at the workshop is the 2-3hr Severe Workshop Primer.

In this catalyst for the workshop, you will put everything together to issue warnings using WES-2 Bridge and get a head start on using the same AWIPS procedures you will use at the workshop.

The Workshop Primer should be completed any time in the week before the workshop (or as near as you can; NOT too early), so you refresh your skills right before you come to the workshop. That way you can focus on your higher-order learning skills, instead of remedial training at the workshop.

The Workshop Primer features instructor-guided web modules, and you will get to practice in the WES-2 Bridge cloud instance on your WFO Cluster.

Students will be marked complete in the CLC as they finish each RAC Primer Lesson. Afterwards, you will complete a short assignment (in a Google form) in the Commerce Learning Center (CLC) by noon Central Time the Friday before your workshop.

4.16 Cloud Instances: WFOCluster or CLAS?

Cloud Instances: WFOCluster or CLAS?

Here's a review of cloud training methods:

WFOCluster	CLAS
<ul style="list-style-type: none">• AWIPS Fundamentals WES Training• AWIPS Proficiency Exam• Convective Storms Applied Performance Drills• WES Impact-Based Warning Exercises• Workshop Primer	<ul style="list-style-type: none">• Hazard Services WES Training• Hazard Services Proficiency Exam• Flash Flood Applied Performance Drills

Notes:

Here's a review of cloud training methods. Please take a moment to review.

4.17 Lesson Completions – Stay on Pace!

Lesson Completions – Stay on Pace!

- RAC is a **HUGE** course
 - over 100 hours
- All distance learning must be completed before a student is permitted to attend the workshop.
- WDTD will send status updates



Notes:

Please be aware that RAC is a **HUGE** course (over 100 hours) and all distance learning must be completed before a student is permitted to attend the workshop. Thus, it's important to

stay on pace. It takes a big time commitment from the student and support for that time commitment from co-workers and the management team.

The RAC Project Leader (Bobby Prentice) will send status updates which include the latest “RAC Training Completion Report” and a course completion timeline in order to help keep you on pace.

5. Workshop

5.1 RAC Workshop

RAC Workshop

- Sessions include:
 - Warning Decision and You
 - Warning Methodology
 - Mini-Scenarios
 - Flash Flood Forecasting
 - Flash Flood Lab (pt 1 & 2)
 - Warning Issuance
 - Simulation Scenarios
 - Communication and Team Dynamics
 - Hazardous Weather Testbed (HWT) Visit
 - Storm Prediction Center (SPC) Visit

Note...Click the “Resources” tab for the schedule



Notes:

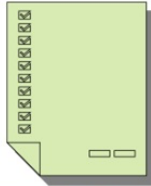
The Workshop is the culmination of RAC. It brings together everything you’ve learned, and more, into a laboratory and simulation environment. Most of your time at the workshop will be in the lab. Typically, you’ll work with two (2) other forecasters and go through events in displaced real-time mode together.

Note...The RAC Workshop Schedule can be found in the “Resources” tab of this lesson.

5.2 RAC Workshop: Prerequisites

RAC Workshop: Prerequisites

- All distance learning must be completed before the workshop, including:
 - All end-of-lesson quizzes
 - AWIPS/Hazard Services Tests
 - WES Exercises
 - Workshop Primer
- Arrive at workshop “warning ready” including:
 - AWIPS “knobology”
 - WarnGen fundamentals



Put me in Coach. I'm ready to play!

Notes:

You must complete all distance learning components before you may attend the workshop including: Lessons quizzes, AWIPS and Hazard Services Proficiency Tests, WES exercises, and the Workshop Primer. Students must arrive at the workshop “warning ready” including AWIPS “knobology” and WarnGen fundamentals. We want you to get the basics out of the way so we can work on your higher order warning forecaster skills at the workshop.

5.3 RAC Workshop: Delivery Method

RAC Workshop: Delivery Method

- In-residence at the National Weather Center (NWC)
- You will be automatically registered via the CLC
- Completion time
 - 40 hours (8 am Monday - 5 pm Friday)
 - Due to flight schedules, many students will be unable to fly home until Saturday!



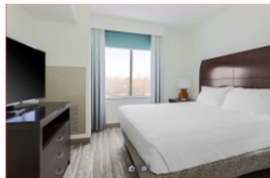
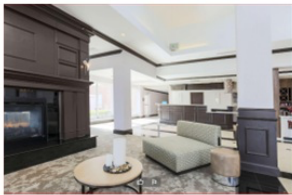
Notes:

The RAC Workshop delivery method is In-residence at the National Weather Center (NWC). You will be automatically registered in the CLC. Completion time is 40 hours for the week, 8 am Monday through 5 pm Friday. Due to flight schedules, many students will be unable to fly home until Saturday!

5.4 RAC Workshop: Lodging

RAC Workshop: Lodging

- **Hilton Garden Inn**
 - Shuttle bus service to and from the National Weather Center (NWC) will be provided



Notes:

Workshop lodging will be at the Hilton Garden Inn located along Interstate 35 on the west side of Norman. This is a twelve (12) minute drive from the National Weather Center (NWC). Shuttle bus service to and from the NWC will be provided.

6. Training Facilitator Responsibilities

6.1 Training Facilitator Responsibilities

Training Facilitator Responsibilities										
Radar & Applications Course (RAC) FYxx: Completion Timeline <small>(topics should be completed in order)</small>										
Class Begins	Orientation		Intro to the WSR-88D System	Principles of Radar	Base and Derived Products	Products Interpretation		Hydro Track Course Completion	Multi-Radar/ Multi-Sensor (MRS) Products	
	Topic	Q&A Webinar	Topic	Topic	Topic	Topic	ILT (Webinar)*	Topic	Topic	Topic
	20 min	30 min	1 hour	7 hours	5 hours	3 hours	2 hours		2 hrs	
	Recommended completion by	Attendance is optional	Recommended completion by	Recommended completion by	Recommended completion by	Deadline	Deadline	Deadline (Hydro Track students only)	Recommended completion by	
Day 0	Day 0	Day 0	Day 2	Day 14	Day 22	Day 40	Day 41	Day 41	Day 41	
Convective Storm Structure and Evolution										
AFun: Hazard Services										
Flash Floods										
Warning Fundamentals										
Humans in the Warning Process										
Workshop Primer **										
Workshop ***										
Topic	Instructor-Led Training (ILT) (webinar)*	CLAS-Scheduled WES Cloud Instance & Exam	Topic	Applied Performance Drills: CLAS-Scheduled WES Cloud Instance	Instructor-Led Training (ILT) (webinar)*	Topic	Instructor-Led Training (ILT) (webinar)*	Topic	WFO WES Cloud Instance	In-residence at the National Weather Center in Norman, OK
11 hours	2 hours	6 hours	4 hours	2 hours	2 hours	3 hours	2 hours	1 hour	2.5 hours	48 hours
Deadline	Deadline	Deadline	Deadline	Deadline	Deadline	Deadline	Deadline	Deadline	Deadline (due noon CT)	
Day 55	Day 56	Day 63	Day 70	Day 70	Day 71	Day 74	Day 75	Day 75	Day 79	Day 82-86
<small>*Students must attend one of the Instructor-Led-Training (ILT) sessions by the listed deadline. Completion of all the topic's lessons is a prerequisite before attending. **Meteorologist Track students should take the Workshop Severe Primer the week before the workshop and need to submit the accompanying assignment in the Commerce Learning Center (CLC) by noon Central Time the Friday before their workshop begins. ***Be aware that RAC is a HUGE course and all distance learning lessons must be completed before a student is permitted to attend the RAC workshop.</small>										

Notes:

Your training facilitator plays a critical role. He/she must ensure you have adequate training time built into your work schedule, monitor your progress to ensure you stay on pace, and provide support and guidance.

6.2 Facilitator Responsibilities: Proficiency Tests

Facilitator Responsibilities: Proficiency Tests

- Proctor Hazard Services Proficiency Test and send results
- Student schedules cloud session with CLAS
- WDTD emails facilitators exams

Hazard Services Proficiency Exam (8/6/2024)

This exam covers the basic mechanics of using Hazard Services, many times using no data. Lengthy full-context data applications are outside the scope of the training. The optimal way to take the exam is using the 1830z cloud simulation used to take all the training, but you could use your AWIPS in practice mode if you have all recommenders functioning. The Basic Tasks 1, Flash Flood Warning/Statement /Flood Warning Transition 4, and Misc. Tasks 6, are required for RAC students. The other tasks should be evaluated to provide a comprehensive assessment of forecaster capabilities. Passing score for RAC components is 70%. You can use the Hazard Services [proficiencies list](#) to assign follow-on review for any areas you deem important. Note the proficiency number is listed next to the point value for each question below (e.g. 5 points; #4a maps out to step #4a on the proficiency list).

Time Estimate: 1-2hrs (play 1830z macro if using in the WES cloud)

Press play on the simulation before starting the exam (important to prevent corrupting watch times).

Notes:

The facilitator is responsible for proctoring the Hazard Services Proficiency Test, though the student will schedule the cloud session for that with CLAS. We will send an email to facilitators with exam access at the start of the course.

7. Support

7.1 RAC Web Page

RAC Web Page

- News and Notes
- Course Description
- RAC Pages
 - Course Outline
 - Course Support
 - Webinar Registration Information

The screenshot shows the 'The Radar & Applications Course (RAC)' page on the Warning Decision Training Division website. The page includes a navigation menu, a 'News and Notes' section with a 'Radar & Applications Course News' article, a 'How to Register?' section, a 'Course Description' section, and a 'RAC Pages' section with links to 'Course Outline', 'Course Support', and 'Webinar Registration Information'. The page also features social media links for Facebook, YouTube, and RSS feeds.

Notes:

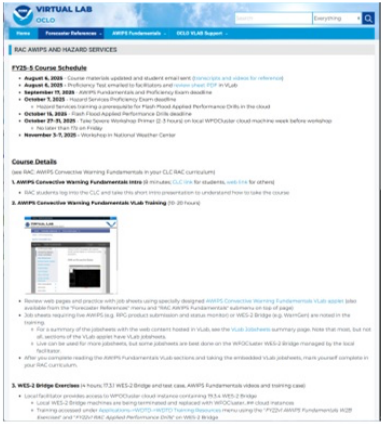
The RAC web page is a good source for course information and support. Note...although the course outline has links to lessons on our web site and the CLC, you must access the lessons from your RAC curriculum on the CLC to receive credit.

7.2 VLab: RAC AWIPS and Hazard Services web page

VLab: RAC AWIPS and Hazard Services web page

<https://vlab.noaa.gov/web/oclo/rac/>

- Fundamentals of AWIPS (FAC) WES-2 Bridge exercises
- Hazard Services training & exam



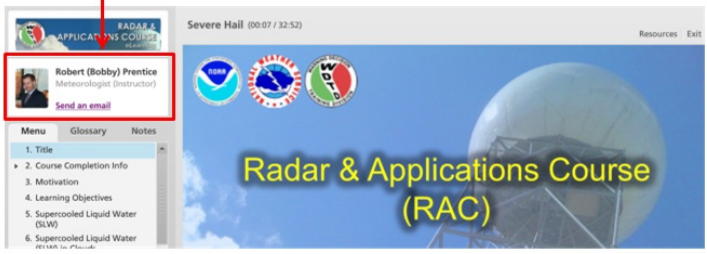
Notes:

The VLab's RAC AWIPS and Hazard Services web page has documentation on course materials, including WES-2 Bridge exercises and Hazard Services training and exam. It should answer most of your questions.

7.3 RAC Support

RAC Support

1. Your office's training facilitator
2. RAC Web page <https://training.weather.gov/wtdt/courses/rac/>
3. The RAC Help Email list nws.wtdt.rachelp@noaa.gov
 - Better for general inquiries and quick responses
4. Contact instructors directly



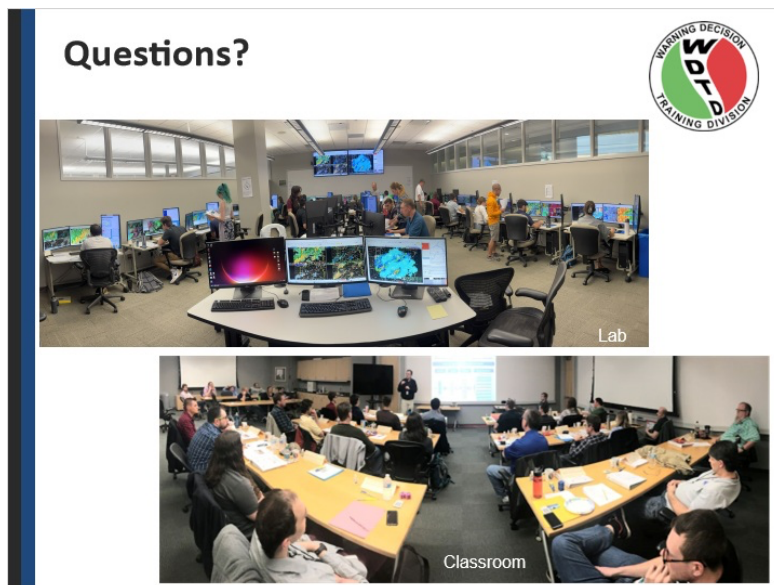
Notes:

There are four sources of RAC support:

1. Your office's training facilitator
2. RAC Web page
3. The RAC Help Email list which contacts the entire RAC Team. This is better for general inquiries and quick responses (for example, instructor is out of the office).
4. Contact instructors directly

The RAC Project Leader (Robert Prentice) will also send RAC status updates via e-mail.

7.4 Questions?



Notes:

If you have questions about this orientation, contact the RAC Help list (nws.wdtd.rachelp@noaa.gov) or ask them verbally during the RAC Orientation's Q & A (Question and Answer) webinar.