Welcome to the Radar & Applications Course (RAC) conducted by the NWS Warning Decision Training Division (WDTD).

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.

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RAC is important because its training is necessary for career advancement in the National Weather Service's GS 5-12 1340 Competency-Based Model.

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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, but it maintains the same format as DLOC.

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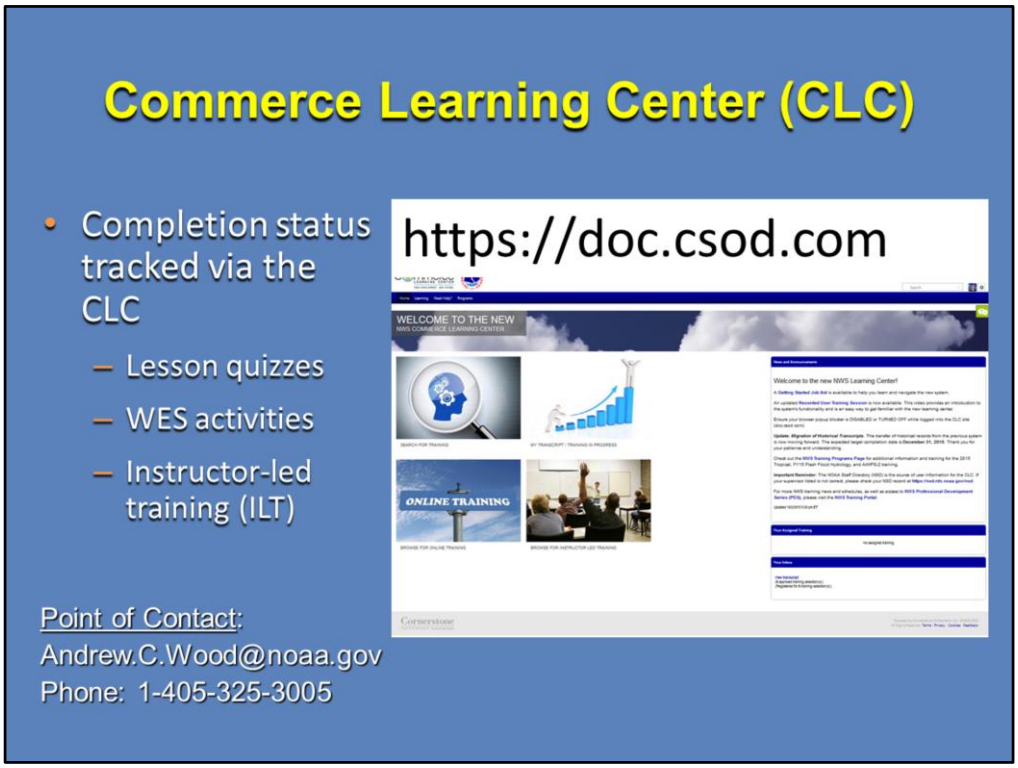

We use the Commerce Learning Center (CLC) to track your completion of each part of the RAC: Lesson quizzes, WES activities, and ILTs. We recommend you bookmark the web address https://doc.csod.com. Most of the lessons are on-line training that you will launch directly from the CLC. Other training (such as AWIPS Warning Fundamentals) will be taken on your local WES machine, 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.

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Your RAC Curriculum is your path to course completion. Use it to register for teletraining sessions, register for workshops, and track your progress.

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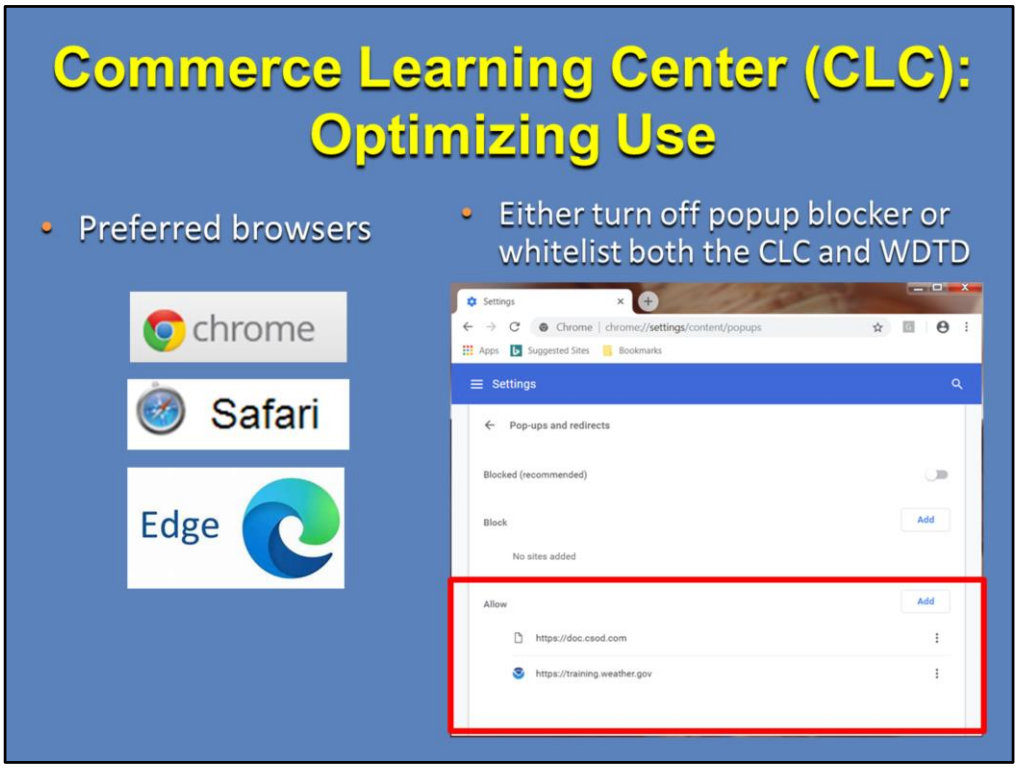
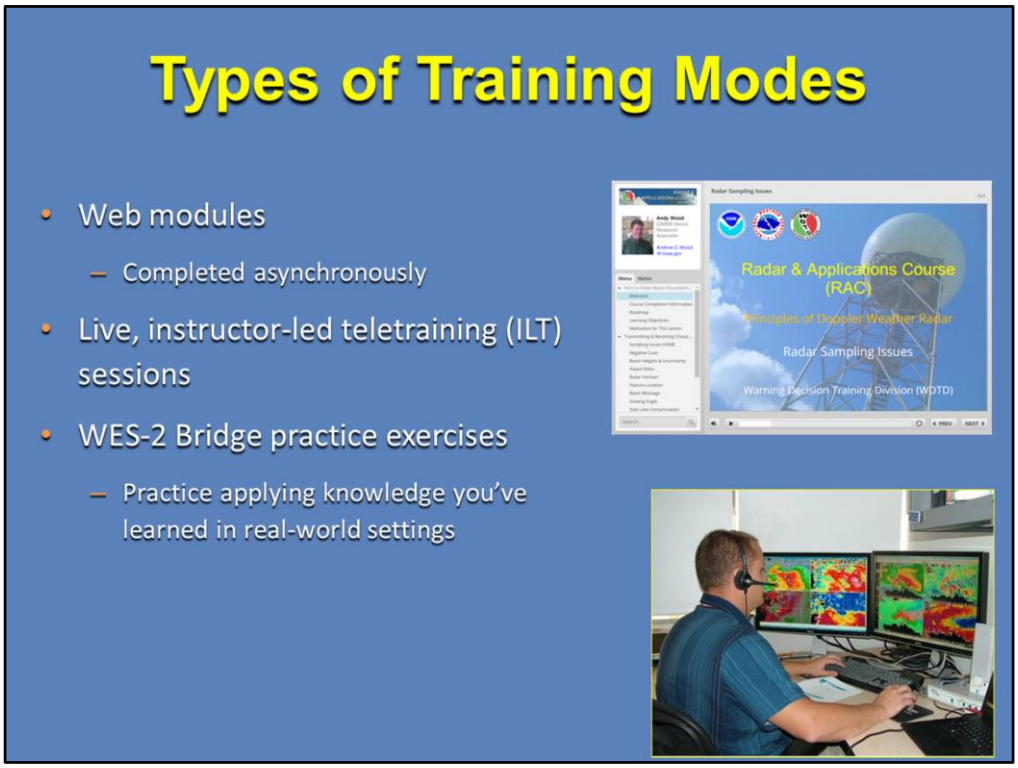


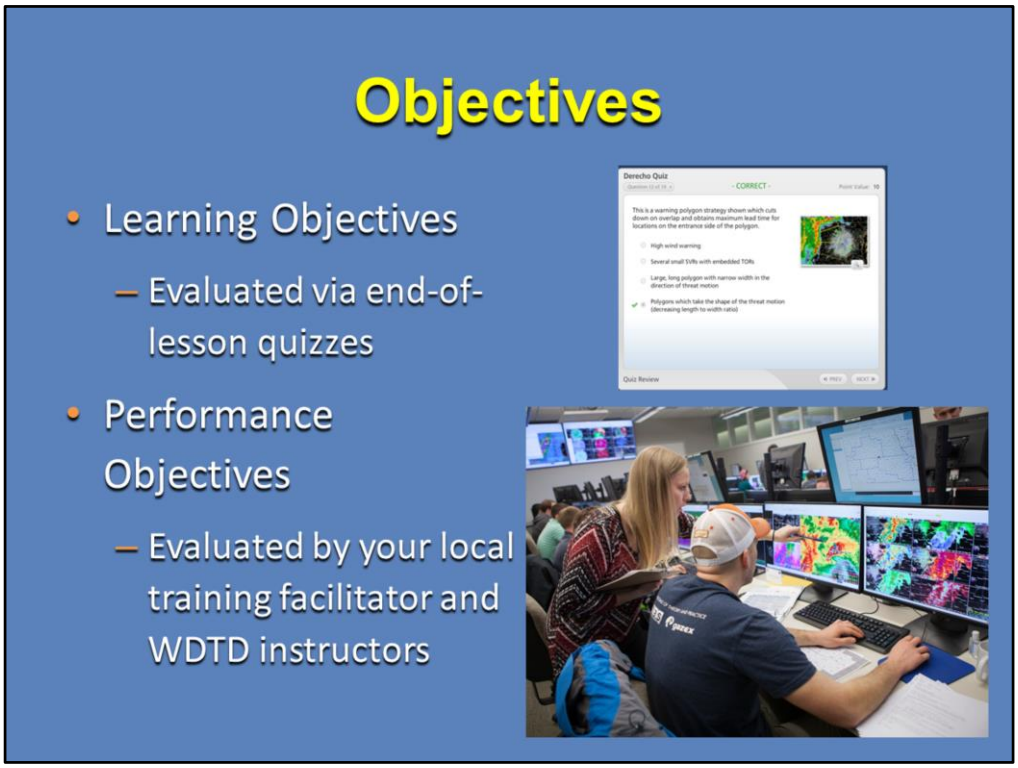
Google Chrome, Microsoft Edge, and Safari should all work effectively with the CLC.

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 web sites.

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.



RAC presents training material in various ways. Some are self-paced modules on the Internet. Others are recorded "Articulate" modules 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 a WDTD instructor. You must pre-register for each teletraining session via the RAC curriculum in the CLC and take it at the scheduled time.



Each lesson contains learning and/or performance objectives. A learning objective is an outcome statement that captures specifically what knowledge, skills, and attitudes learners should be able to exhibit following instruction. We assess it in RAC via an end-of-lesson quiz.

A performance objective is a statement that clearly describes the behavior or performance the learner is expected to exhibit as a result of training. We assess it in RAC via AWIPS WES exercises by your training facilitator, the AWIPS Proficiency Test by your training facilitator, and at the RAC Workshop Lab by WDTD instructors.

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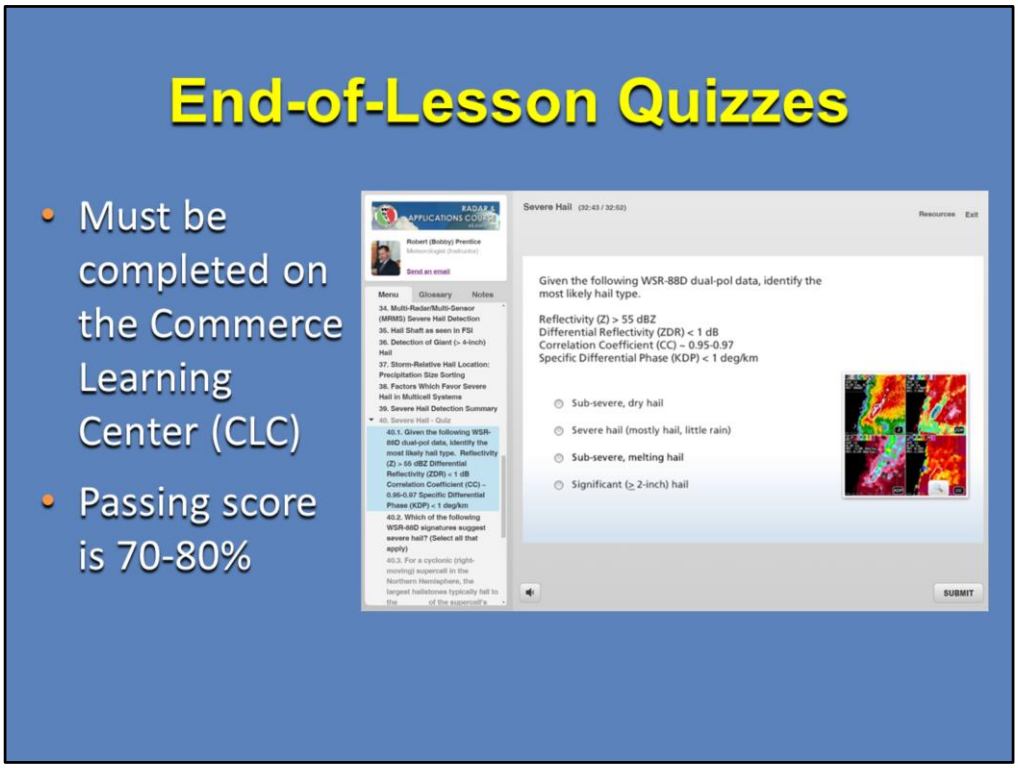

End-of-Lesson Quizzes must be completed on the Commerce Learning Center (CLC). Passing score is 70-80%.

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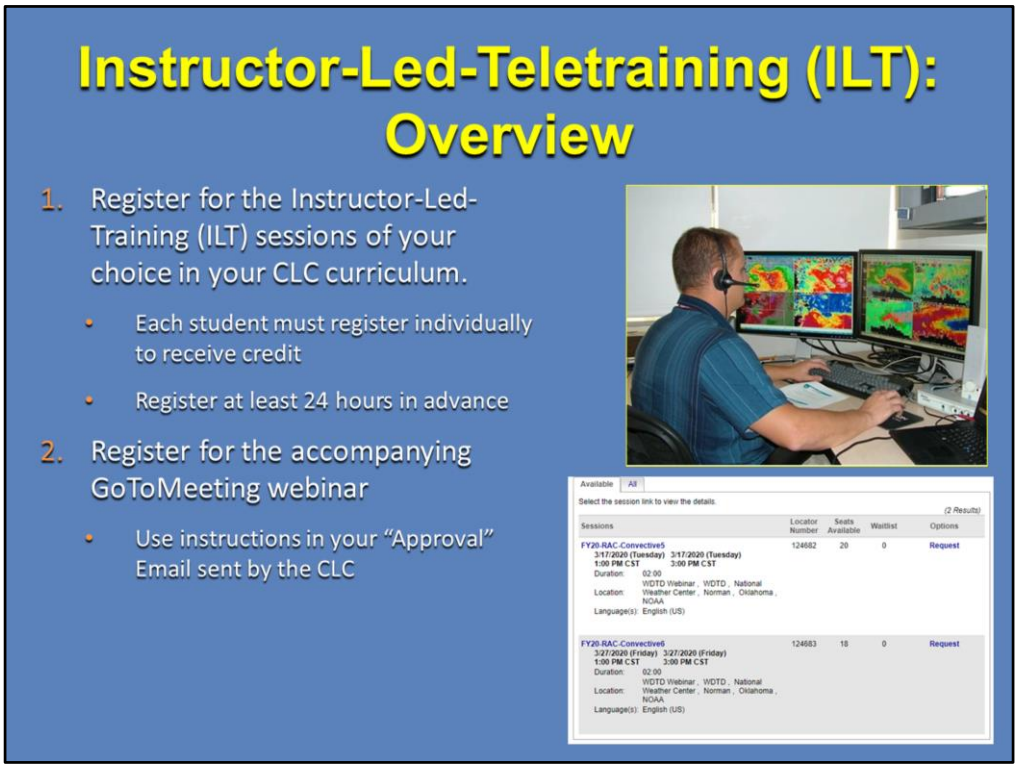
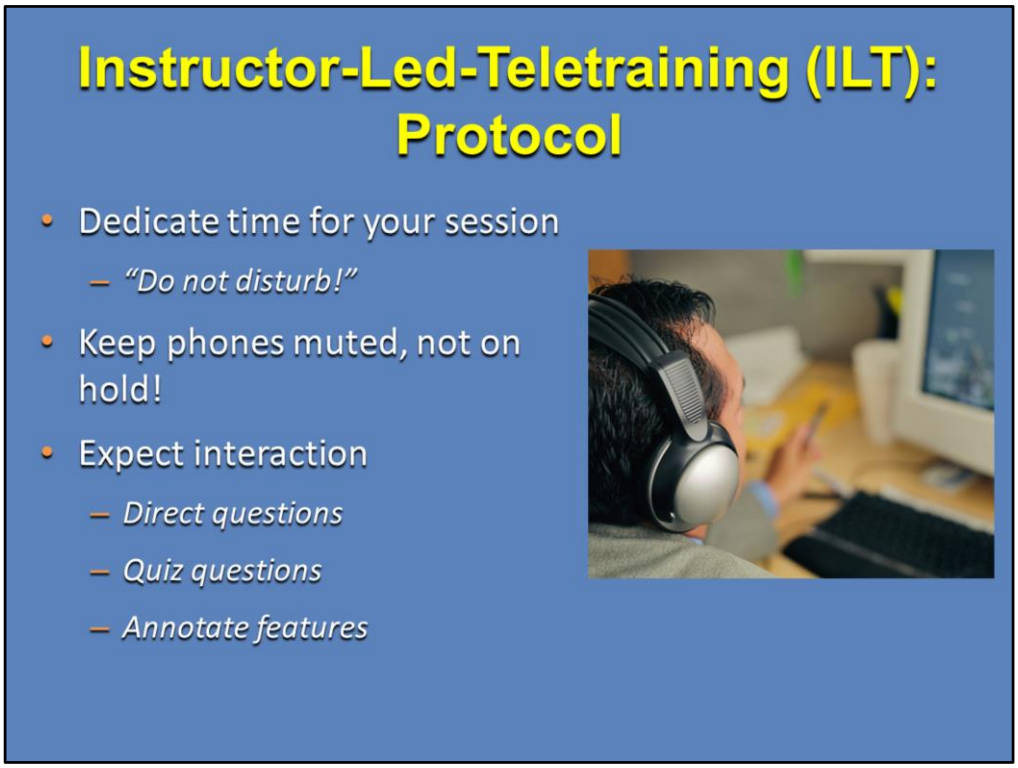


Teletraining means we train live over the internet. The registration steps are:

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.
2. Register for the accompanying GoToMeeting webinar using instructions in your "Approval" Email sent by the CLC. Contact WDTD (nws.wdtd.rachelp@noaa.gov) if the Email hasn't arrived within 24 hours (should come in just a few minutes)

Note…The audio for each session is via WDTD's RAC Line, 1-866-564-5812. Student passcode is 2094167# We no longer use the RAC line for audio!



During teletraining sessions: Dedicate undisturbed time for your session, keep phones muted, not on hold, and expect interaction.

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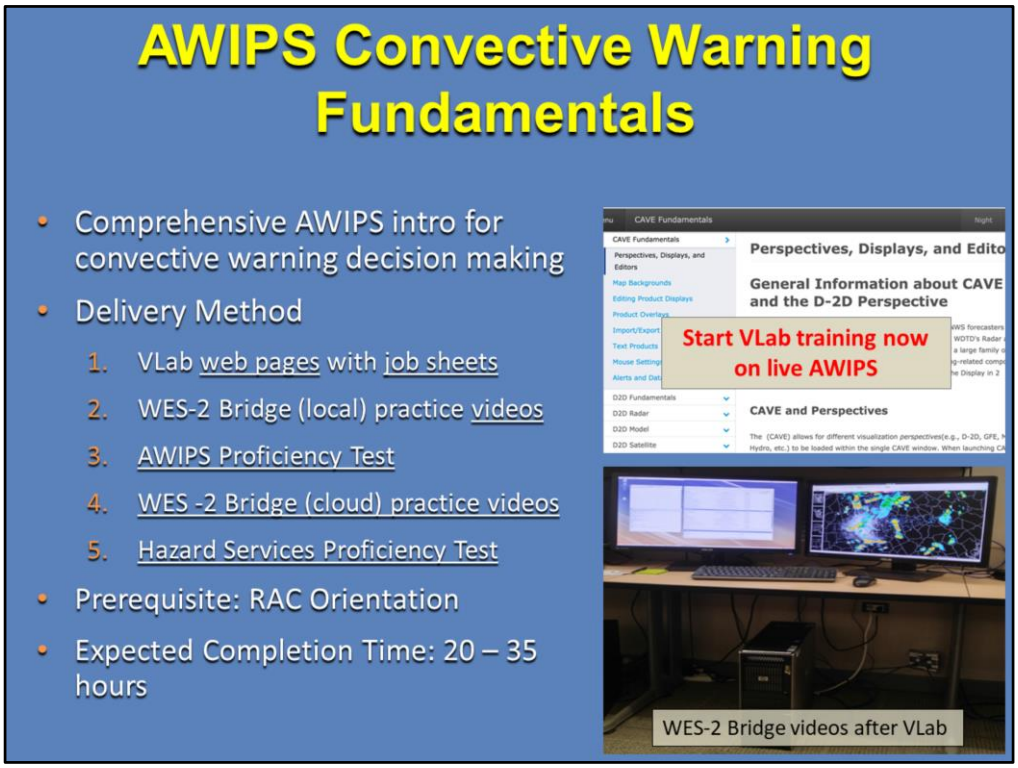

The AWIPS Convective Warning Fundamentals is a comprehensive introduction to all the AWIPS convective warning-related tools. All RAC students must take it, including "experienced" forecasters, because it's important that everyone have the same WDTD approved skill set and be on the same page when they work together as a warning team in our Workshop simulations.

The delivery method is a blend of VLab, local WES-2 Bridge, and cloud WES-2 Bridge. Most of the VLab web pages and job sheets are taken on the live AWIPS. The initial practice videos must be taken on the local WES-2 Bridge workstation. Most of the content is independent of AWIPS builds, but there will be notes about any different AWIPS behaviors between builds in the VLab materials. The VLab job sheets and WES videos will prepare you to take an AWIPS proficiency test that is proctored by your local facilitator.

There is also a cloud-base WES-2 Bridge that will be used for the Hazard Services training and Hazard Services proficiency test that is also proctored by your local facilitator.

You can start the AWIPS Convective Warning Fundamentals immediately once RAC begins. Expect both VLab and WES-2 Bridge exercises to take 20-35 hours.

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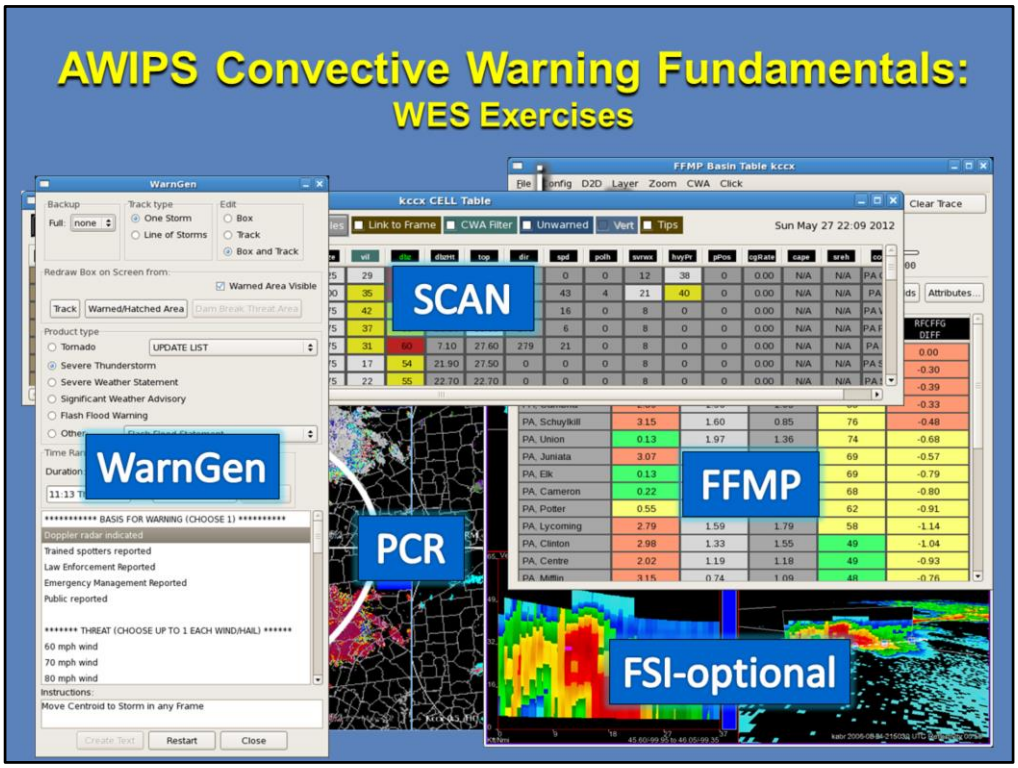
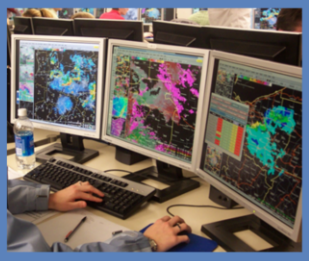


The WES Exercises cover AWIPS applications that you will use in warning decision making in your job.

It is important for you to develop a basic proficiency with these different AWIPS tools even if your current office doesn't use all of them because you will likely use some of these at different offices in your career and you need the latest exposure to all these tools to make an informed decision about what tools ultimately work best for you. Because FSI has had some recent performance problems, it will be the lone optional part of the course. All the other applications are required for this course.

AWIPS Convective Warning Fundamentals:
Proficiency Test

- Demonstrate AWIPS radar and warning proficiency
  - Student will see assignment in CLC
  - Administered by training facilitator
- Score of at least 70% required
  - Retake at discretion of training facilitator
  - Tracking simplified
  - Training facilitator: Scan and email Michael.A.Magsig@noaa.gov
- ***Must complete before the Convective Storm Structure and Evolution topic's Applied Performance Drills***



You will see the AWIPS Proficiency Test listed as an assignment in the CLC. It is a timed, paper exam administered by your training facilitator. The facilitator will observe your performance of specific AWIPS 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 emails it to Michael.A.Magsig@noaa.gov and Mike will then enter the score in the CLC so you receive completion credit.

Note: You must complete the AWIPS Proficiency Test before the Convective Storm Structure and Evolution topic's Applied Performance Drills.

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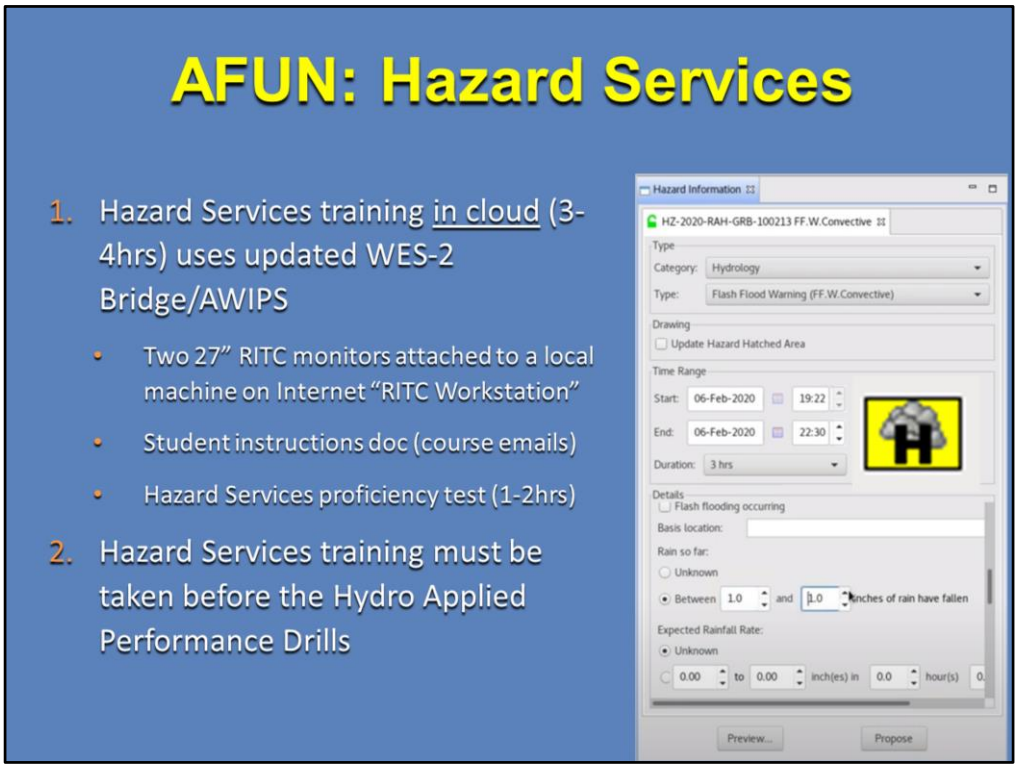

The Hazard Services component of AWIPS Fundamentals is provided in the cloud using an updated version of WES-2 Bridge and AWIPS. Two 27" monitors were sent to every office for use with RAC, and these monitors will need to be attached to a local machine on the Internet that we will refer to as the RAC In The Cloud (or RITC) workstation to take the training.

Instructions for students to sign up on the Google Calendar for cloud slots is provided in the student instructions doc which is provided in course emails.

The Hazard Services proficiency test is similar to the AWIPS proficiency test and will be proctored by the facilitator. The test will take about 1-2hrs.

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

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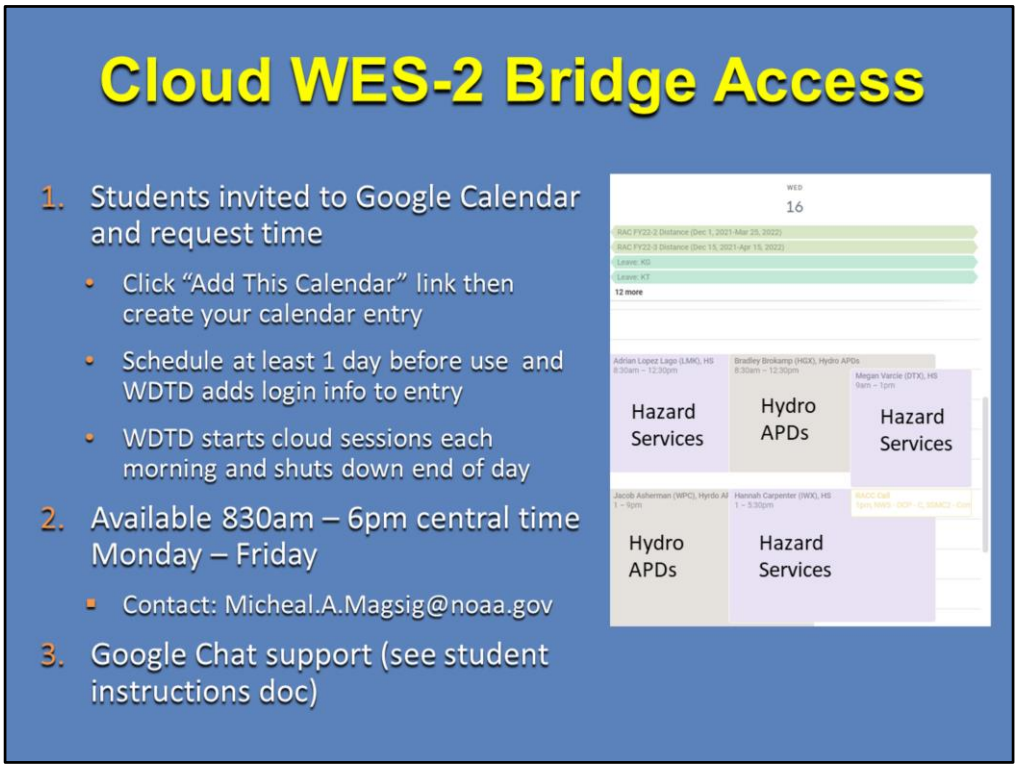

The Cloud WES-2 Bridge access is easy. Students are invited to a Google Calendar and need to click on the link to add the calendar to their Google Calendar. The student simply creates a calendar entry for the time they need at least a day before it is needed. Each morning WDTD starts up the cloud instances and shuts them down according to the calendars.

There are actually two calendars, one for Hazard Services training and the other for Hydro Applied Performance Drills, or APDs, training.

The cloud training is available between 830am and 6pm central time Monday through Friday. Contact Mike for special circumstances.

We use Google Chat for supporting the cloud, so if WES has any issues starting up or you run into a cloud snag, we are just a chat away from fixing you up!

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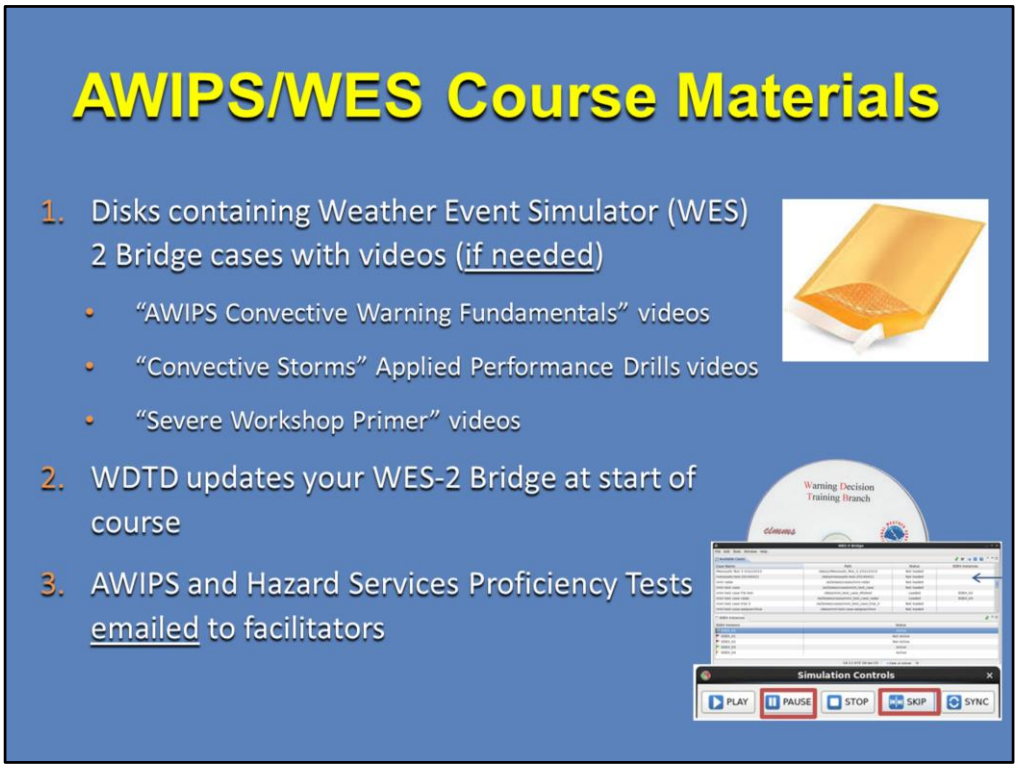
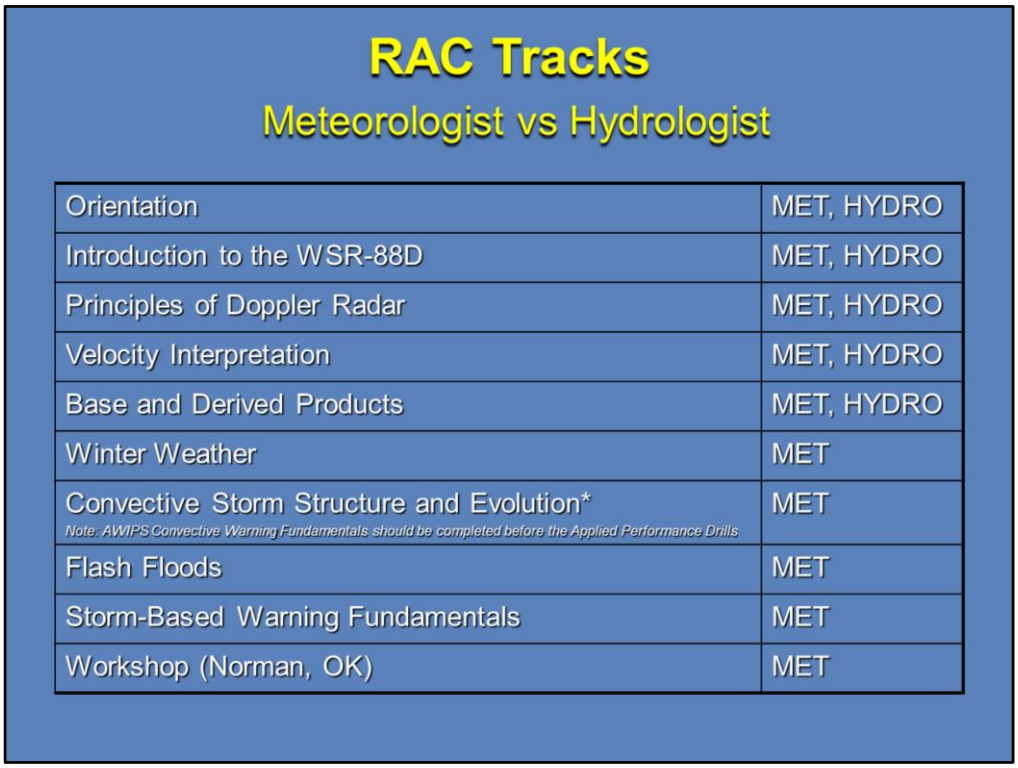


Most offices already have the WES-2 Bridge materials installed for this class's training. If you do not have the WES cases, we will send you the installation discs at the start of the course. This involves the AWIPS Convective Warning Fundamentals videos, the Convective Storms Applied Performance Drills videos, and the Severe Workshop Primer videos.

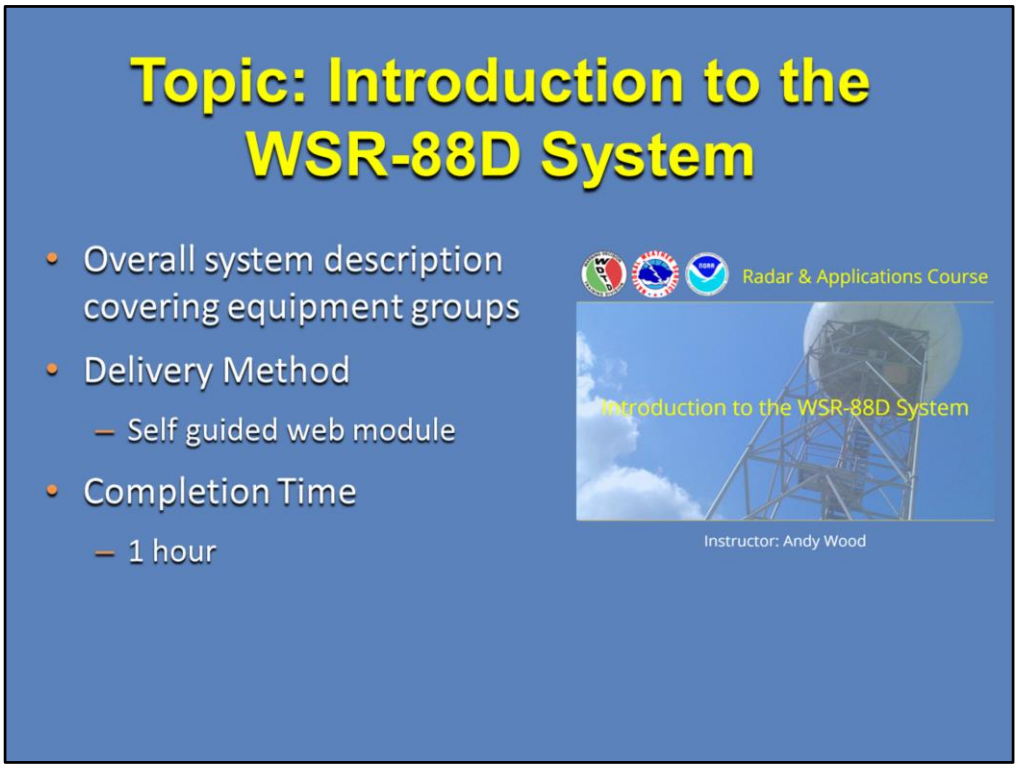
There are some further updates to the WES that our WES folks will install on your WES-2 Bridge workstation at the start of the course, so you will have everything you need.

The AWIPS proficiency test and Hazard Services proficiency test will be emailed to the facilitators at the start of the course.

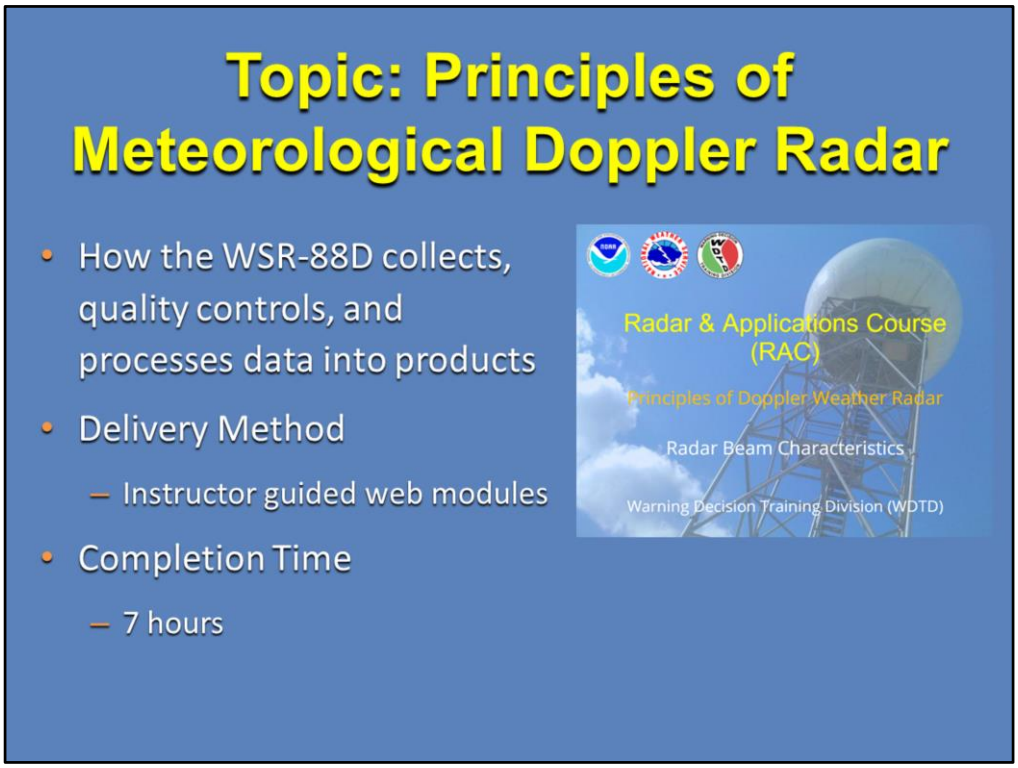


Let's discuss the RAC topics. You should complete them in order since they build on each other.

Most RAC students are Meteorologists who have been assigned to the Meteorologist Track, but a few are Hydrologists who have been assigned to the Hydrologist Track.



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



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

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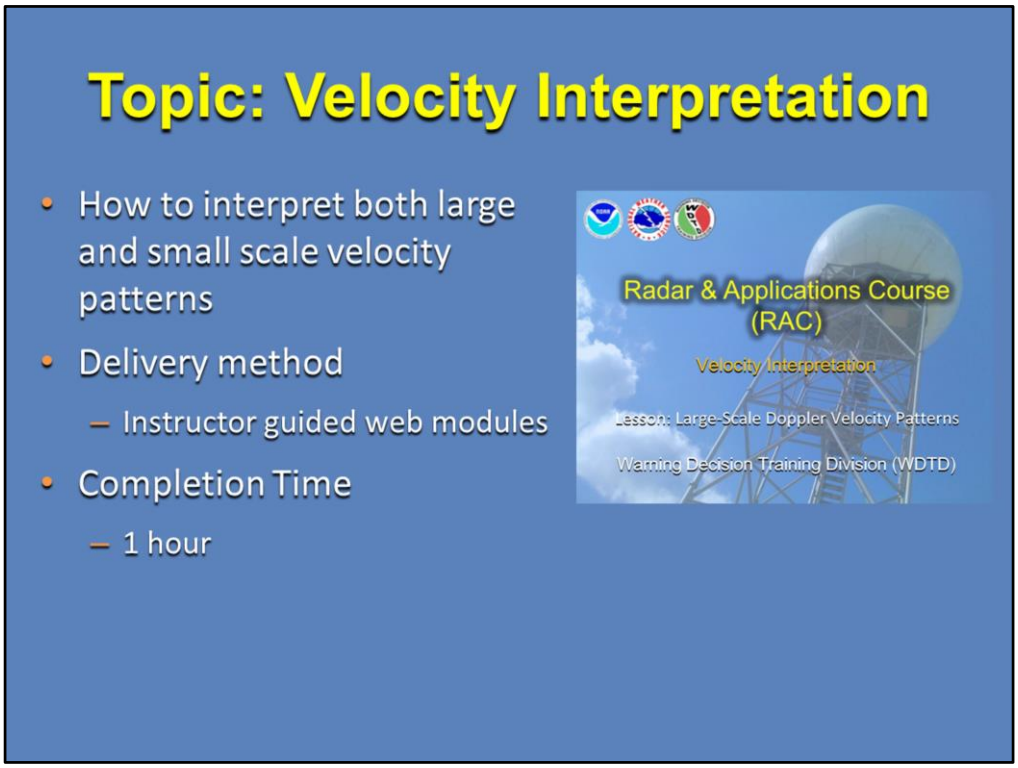
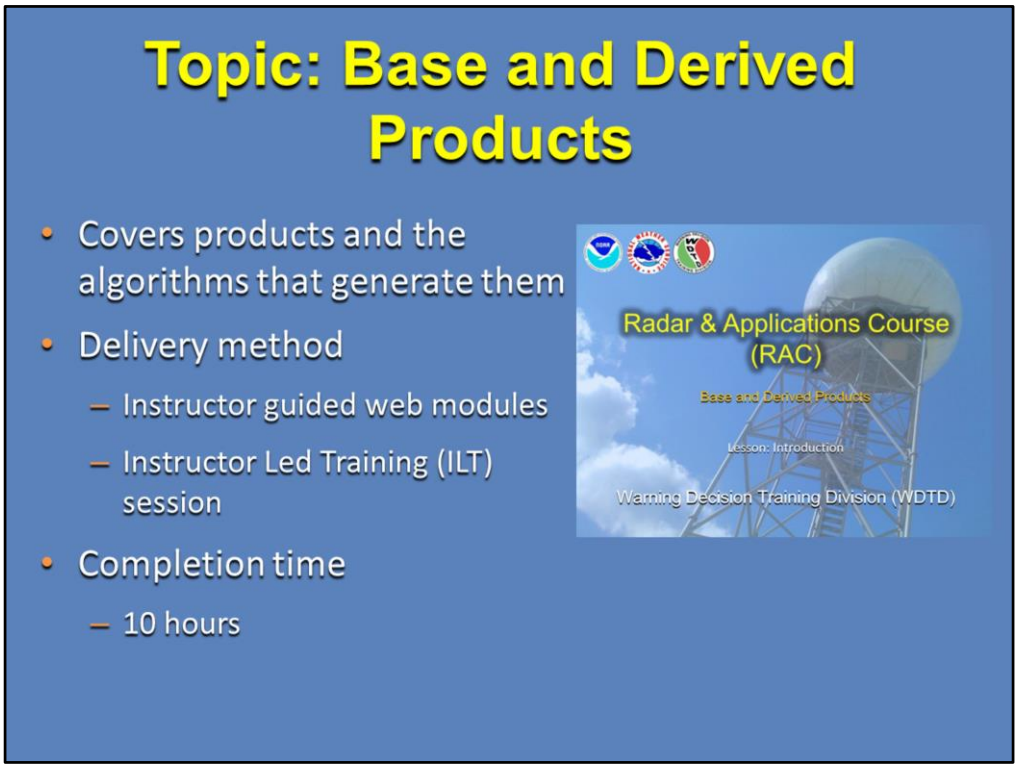
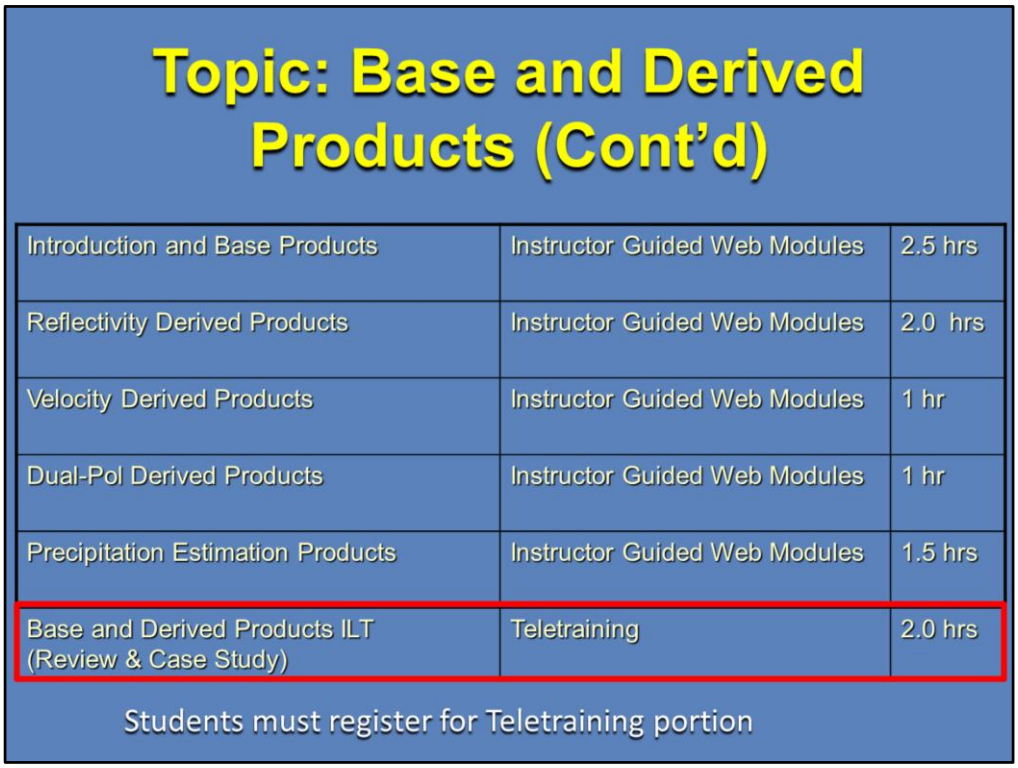


The Velocity Interpretation topic consists of instructor guided web modules which cover how to interpret both large and small scale velocity patterns. Completion time is about one hour.

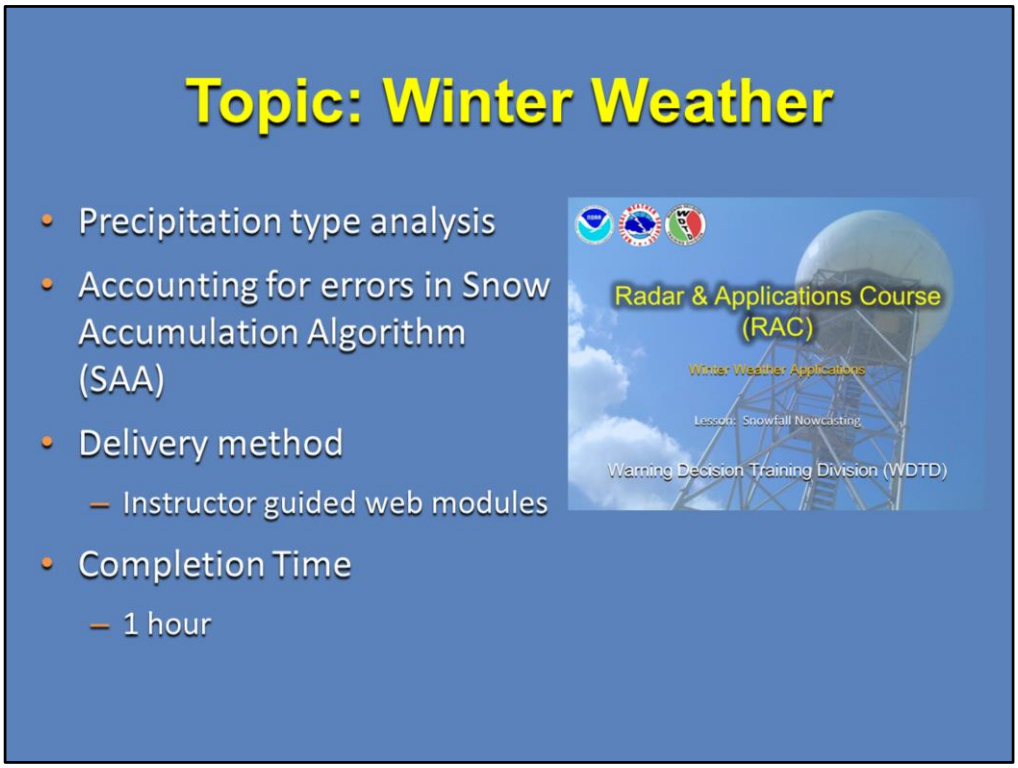


The Base and Derived Products topic covers products and the algorithms that generate them. Delivery method consists of both instructor guided web modules and an instructor led training session. **Completion time is about ten hours.**

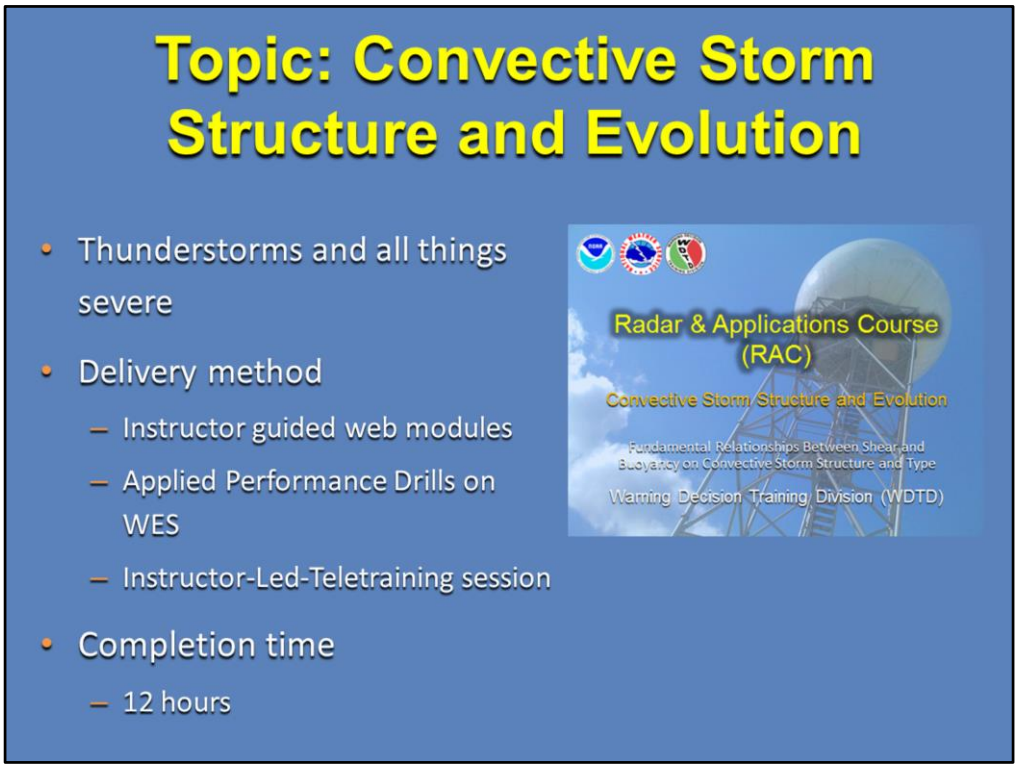


The lessons in this topic are organized into sections.

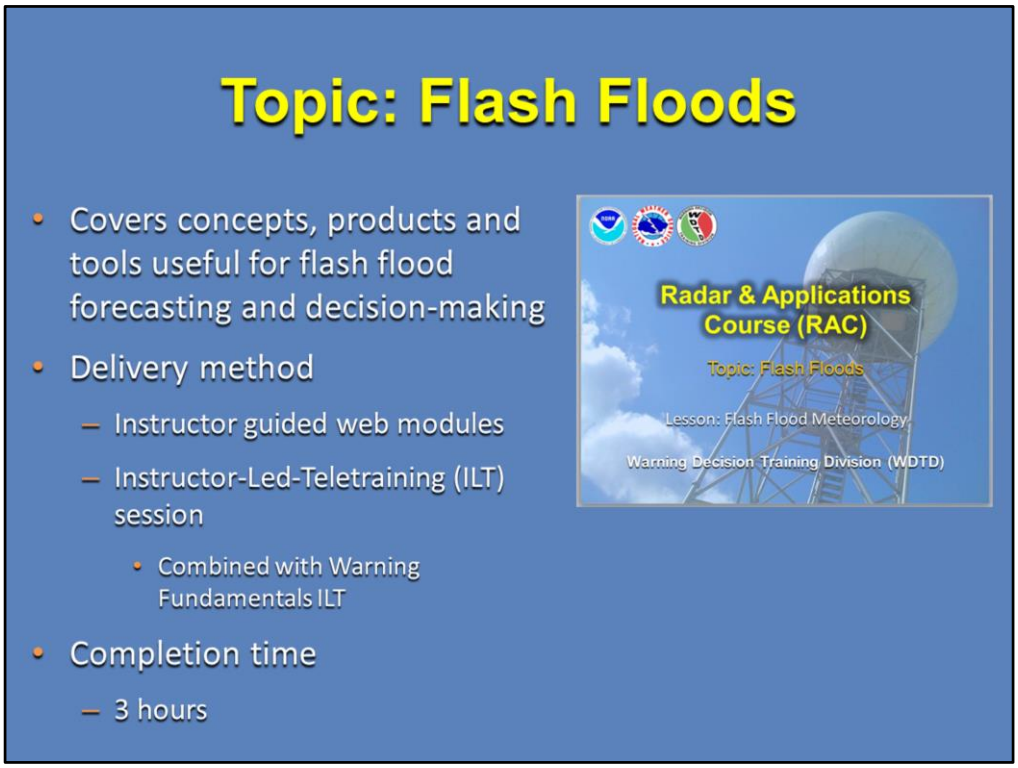
The final lesson "Products Review & Case Study" is an Instructor-Led Teletraining session. You must pre-register in the CLC for one of the sessions.



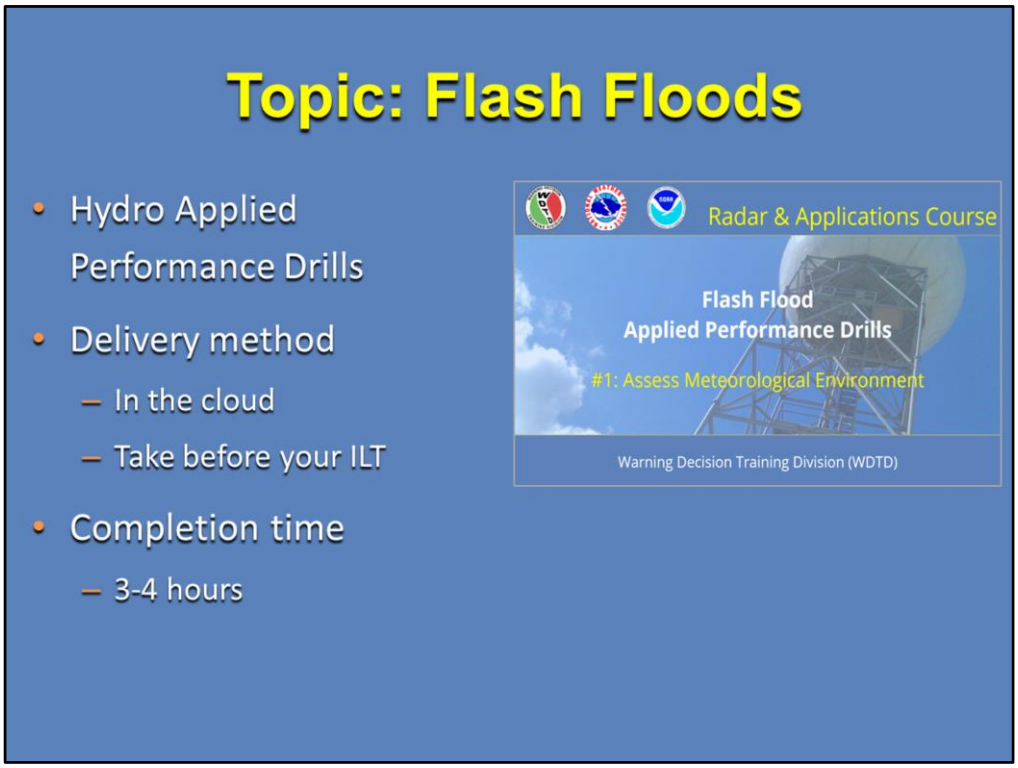
The Winter Weather topic consists of instructor guided web modules which cover precipitation type analysis and how to account for errors in the Snow Accumulation Algorithm. Completion time is about one hour.



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 Weather Event Simulator (WES-2 Bridge), and an Instructor-Led-Teletraining (ILT) session. This is the longest topic; completion time is about twelve hours.



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) session which will be combined with the Warning Fundamentals ILT. Completion time is approximately three hours.



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

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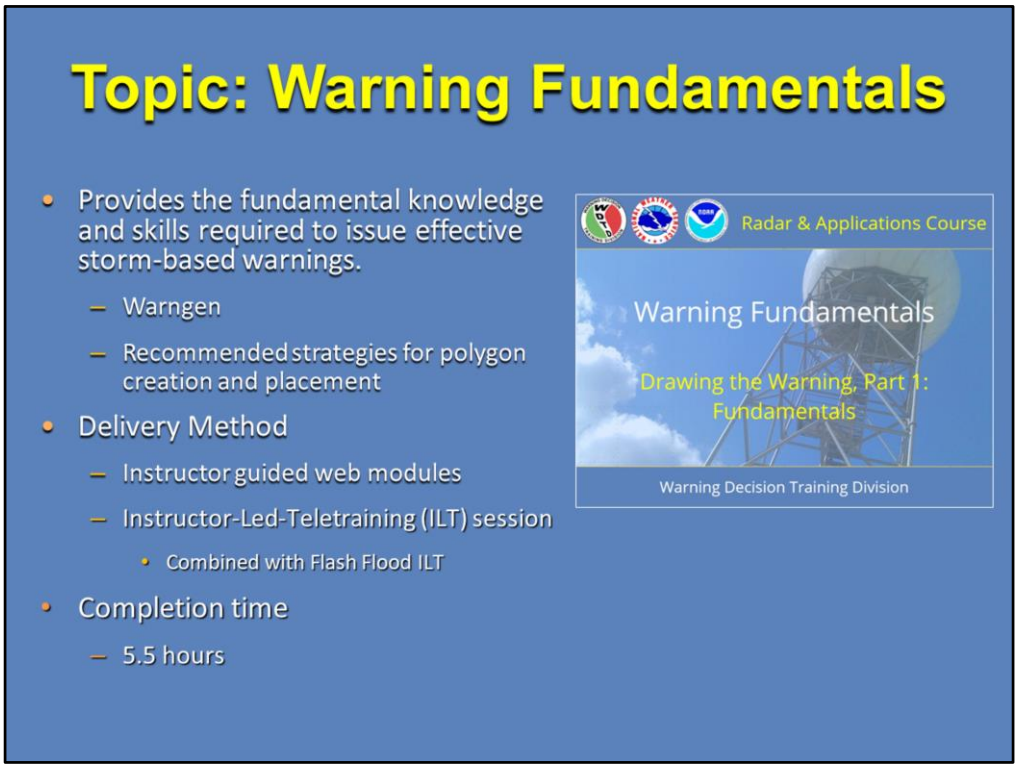

The Warning Fundamentals topic provides the fundamental knowledge and skills required to issue effective storm-based warnings. Training includes skills for basic proficiency in using some AWIPS storm analysis applications such as WarnGen and recommended strategies for polygon creation and placement.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

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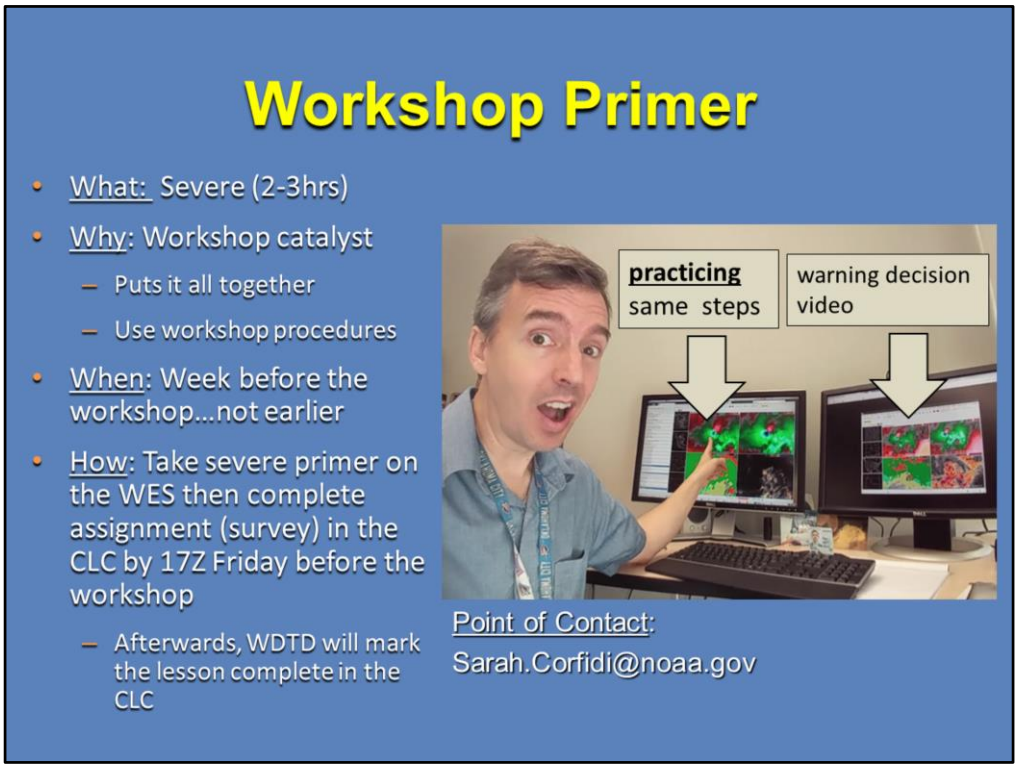

One very important exercise that will help prepare you for the week of simulation nirvana at the workshop is the 2-3hr Severe Workshop Primer.

In this catalyst for the workshop, you will start to 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 demonstration videos playing on one monitor while you practice the same steps on the other monitor. Afterwards, complete the assignment (which is a survey) in the Commerce Learning Center (CLC) by 17Z the Friday before your workshop.

WDTD will mark the lessons complete in the CLC after the facilitator sends Sarah the score.

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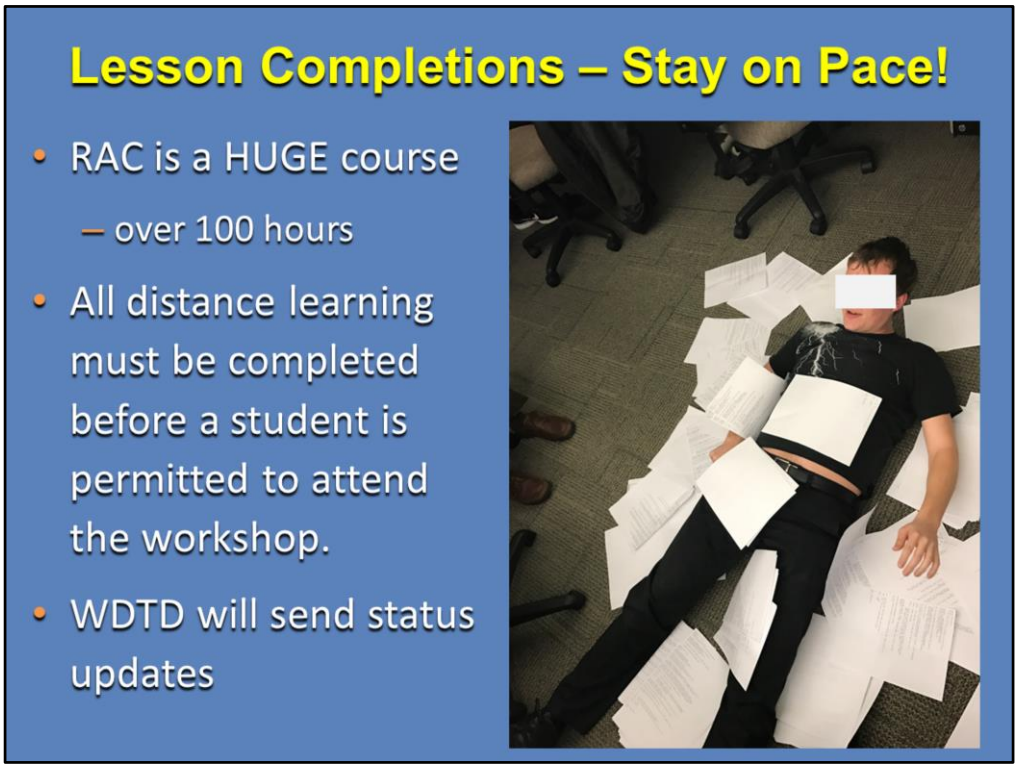


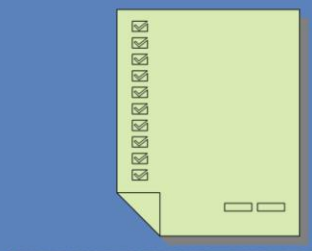
Please be aware that RAC is a **HUGE** course (over 100 hours) and all distance learning must be completed before a student is permitted to attend the workshop. Thus, it's important to stay on pace. It takes a big time commitment from the student and support for that time commitment from co-workers and 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.

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.

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



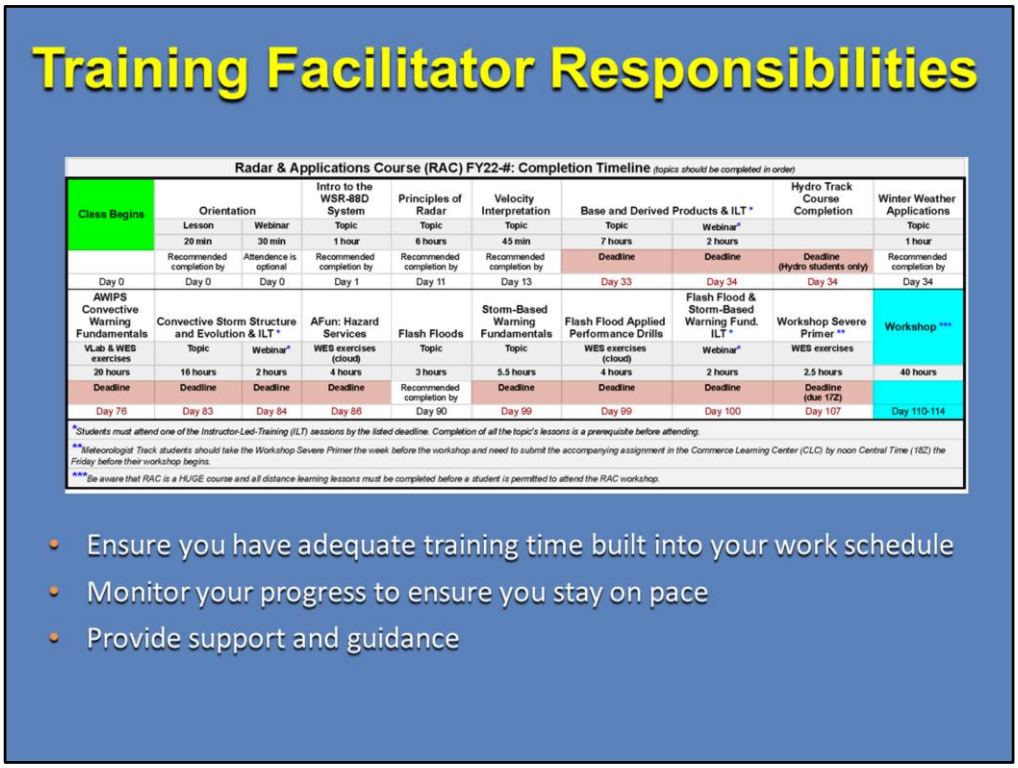
Put me in Coach. I'm ready to play!

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 "knob-ology" 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.

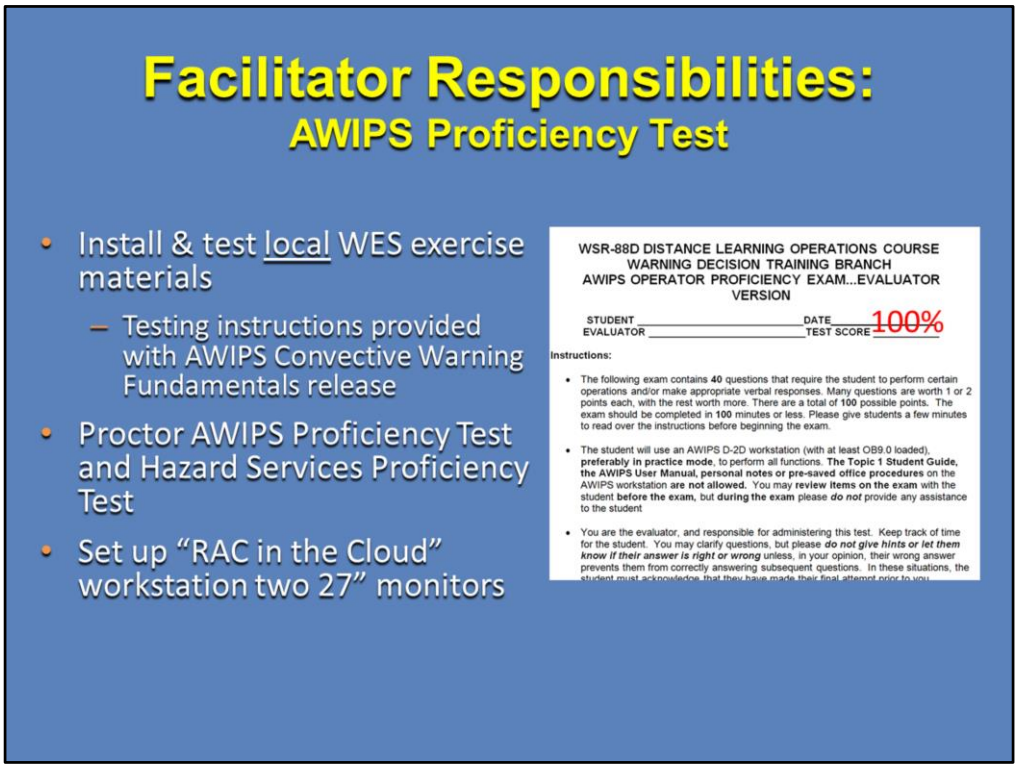
The RAC Workshop delivery method is In-residence at the National Weather Center (NWC). You will be automatically registered in the CLC. Completion time is 40 hours for the week, 8 am Monday through 5 pm Friday. Due to flight schedules, many students will be unable to fly home until Saturday!

Workshop lodging will be at the National Center for Employee Development (NCED) Conference Center and Hotel located three miles east of the National Weather Center (NWC) in Norman. Most of the hotel's guests are postal service employees in-training as students in the NCED Training Facility on the same grounds across the street. You will be asked to provide WDTD with your travel information in the RAC curriculum section of your NWS CLC account.

In-residence workshops resumed in April 2022. “RAC in the Cloud” (virtual) workshops are a backup plan in the event of a future COVID shutdown.



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.



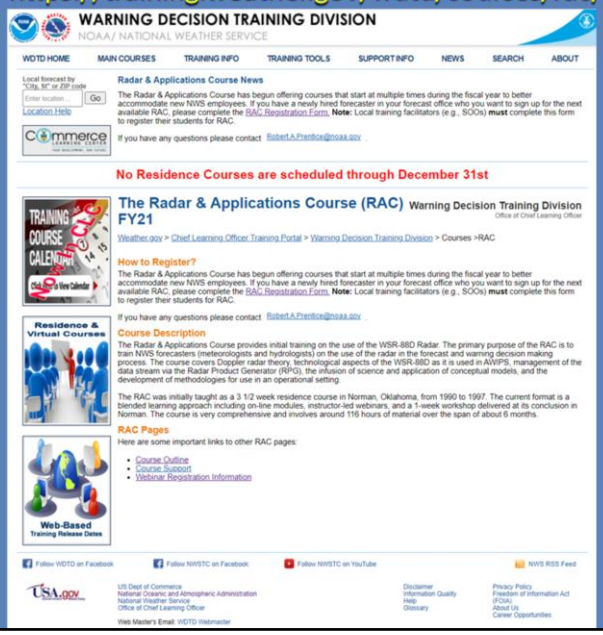
Your facilitator must also install and test the local WES exercise materials (unless they've already been installed) and proctor the AWIPS Proficiency Test and Hazard Services Proficiency Test. Testing instructions are provided with the AWIPS Convective Warning Fundamentals release.

The facilitator also needs to work with local IT to set up the two 27" monitors to the local machine identified to be the "RAC in the Cloud" workstation.

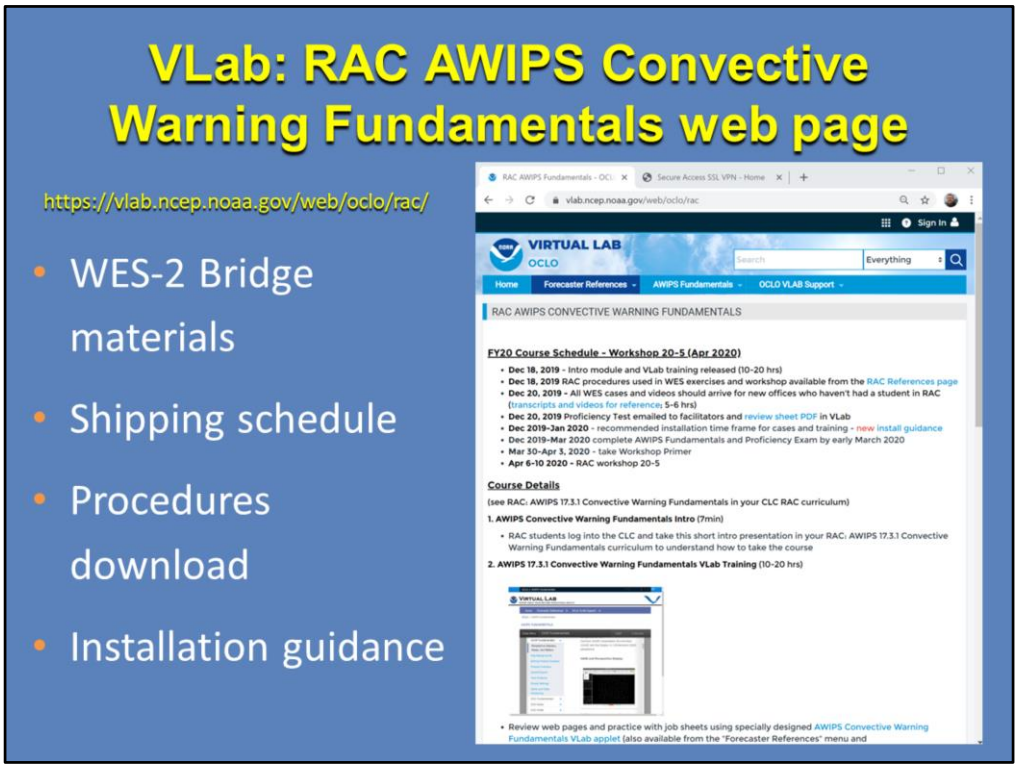
RAC Web Page

https://training.weather.gov/wdtd/courses/rac/

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



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



The VLab's AWIPS Convective Warning Fundamentals web page has all the documentation about WES-2 Bridge materials, shipping schedule, procedures download, and installation guidance. It should answer most of your AWIPS and WES-2 Bridge questions.

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There are four sources of RAC support:

1. Your office's training facilitator (usually your SOO or DOH).
2. RAC Web page
3. The RAC Help Email list which contacts the entire WDTD 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 Manager (Bobby Prentice) will also send RAC status updates via e-mail.

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