

Your Guide to Teaching Science Online

carolina.com/distancelearning



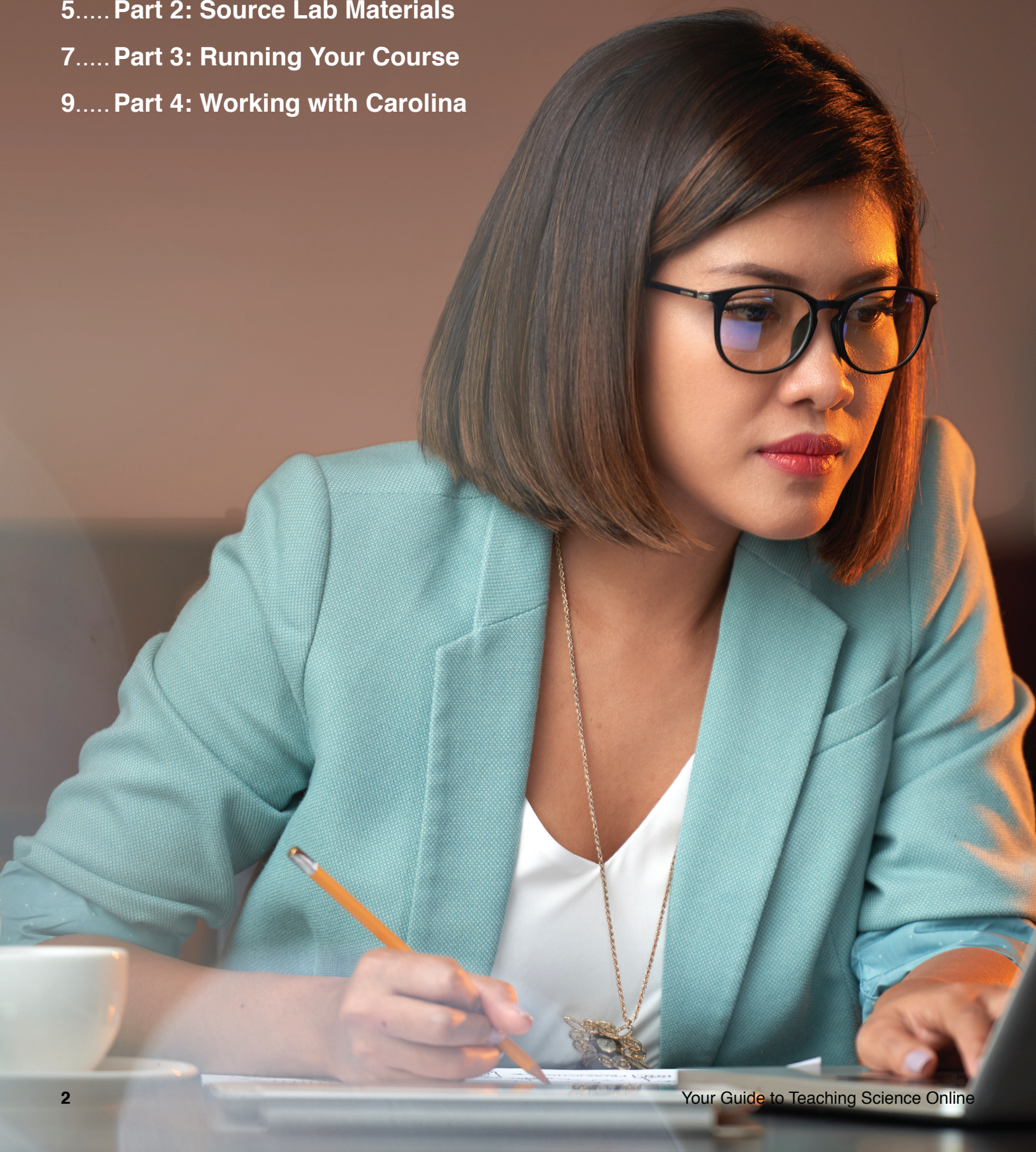
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PART 1:

Planning Your Course

Take the First Steps

In this guide, we cover the steps you need to take to plan, develop, and run a successful online science course.

Whether you are offering a course that is:

- Completely new
- Redesigned
- Well established, but in need of improvement
- Amazing, but capable of being even better

Planning is the key to a strong start and an excellent run.

Focus Questions

Use focus questions to develop your framework for a successful online teaching experience.



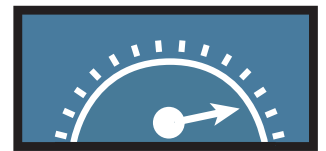
1. What are my desired learning outcomes, and how do I enable students to meet them?



2. How do I facilitate communication within my course?



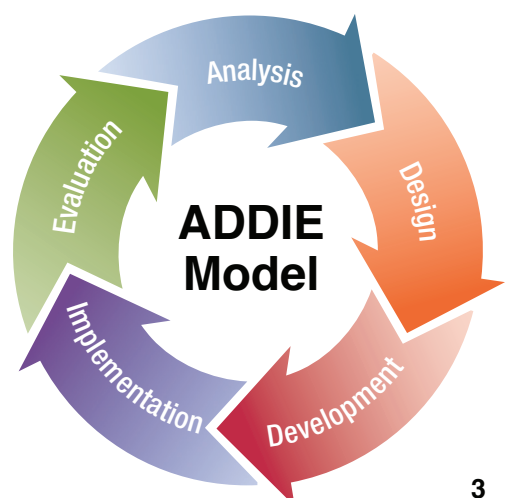
3. How will my students order and receive their course/kit materials?



4. How do I assess student learning and maintain academic integrity?

ADDIE

Prepare early so you can use the full ADDIE model: **analysis**, **design**, **development**, **implementation**, and **evaluation**.





Made ADA Compliant

[NetCentric Technologies](#) uses the CommonLook® software to make Carolina Distance Learning® labs ADA compliant.



Consider Students with Disabilities

Plan ahead for students who need accommodations for disabilities.

Know your institution's policies and resources. Select course materials that follow Americans with Disabilities Act (ADA) guidelines, including:

- Videos with captions and/or transcripts
- Documents and web pages accessible with screen readers

On-Campus to Online?

Are you converting the course from the classroom to an online format?

The same learning outcomes may be used in both settings. You'll need lab materials that support your existing learning outcomes.

New or Revised Course?


If you are developing a new course or revising an existing one, draw on resources that can help. Curriculum recommendations are often provided by academic and professional organizations, such as the:

- [American Society for Microbiology](#)
- [Human Anatomy & Physiology Society](#)
- [American Chemical Society](#)

Your institution may provide resources to assist you in course design.



Contact a Distance Learning Specialist at [Carolina Distance Learning®](#) or call 800.334.5551.

Next, you'll need lab materials that support your learning outcomes . . . 

PART 2:

Source Lab Materials

You can get the required materials through multiple approaches:

- Choose virtual labs
- Provide lab instructions and a shopping list to your students
- Assemble kits yourself
- Select a kit from a **vendor**



Consider Cost and Time

Cost: With careful planning, you can keep costs relatively low; however:

- Students must invest time and money shopping for needed materials
- Students often purchase materials that far exceed what is needed for the course

Time: Most published lab manuals are time consuming to adapt for distance learning because:

- Instructions must be developed or modified for in-home labs. Replication of a lab setting can be difficult.
- Lab equipment, reagents, specimens, etc. may not be readily available. You can't monitor quality or safety of materials.
- You must determine if liability issues are a concern.



Pros and Cons of DIY Kits



A do-it-yourself approach gives you complete control over kit contents.

That can mean spending a lot of time collecting and assembling kit components, though—and kits and components take up space. Distribution to off-site students can be problematic. Who's liable in case of injury?

May We Suggest?

Carolina Distance Learning® kits, because they:

- Are professionally designed and assembled and ready for use right out of the box
- Include easy-to-follow digital lab manuals with embedded safety and instructional videos
- Have been tested in a home setting for safety, reliability, and repeatability
- Save time and space
- Enable you to choose the best value from many options
- Enable you to choose only the investigations that match your learning outcomes
- Are backed by excellent customer service and liability insurance



Allow Time for Your Lab Materials to Arrive

Select lab materials as early as possible. Allow time for components to arrive and kits to be assembled if you're building your own. If you're using a [vendor kit](#), allow time for production. Four weeks are typically needed.

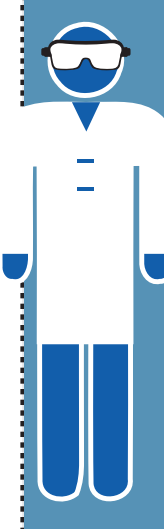
Notify students of the need to purchase lab materials as far in advance as possible. Advise students to plan for expenses, safe storage of perishables, and more.

Give Students a Deadline

If you're using vendor kits, let students know approximately when to order, and when they need to have the kit in hand. Requiring proof of kit purchase by a set deadline encourages students to order on time.

Decide what provisions you'll make for military students or students who are abroad.

Best Practices for Safety



Instructors How You Can Help

Document competency in safety before assigning the first lab by requiring safety training for online students.

Require correct procedures in all videos and photo documentation of a laboratory investigation.

Require students to sign a safety contract.

Give pre-lab assignments that include a review of safety hazards and safety precautions. Encourage good safety practices in all communications with students.

If you make your own demonstration videos, use proper personal protective equipment (PPE) as an example for students.

DANGER

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PART 3:

Running Your Course

Start with Safety

You can produce your own lab safety training program. Allow adequate time for preparation and editing.

Safety training may be included with a vendor kit. [Carolina Distance Learning® kits](#) include safety and instructional videos, a safety manual, and a [safety agreement](#).



Make Connections

Introduce yourself to your students as soon as the course begins. Consider including a photo or doing a video introduction.

Have students introduce themselves and get to know one another during the first week of class.

- Use the discussion board as a venue to meet
- Greet each student personally and allow them to interact

Set the stage for open communication throughout the term.



Studies Show

- If students aren't engaged, they can't perform at their best.
- A sense of belonging to a group enhances student performance.
- Online study groups help students to stay focused.
- Having a place to discuss issues with other students increases student effort.



Recommended Reading

[Managing Academic Integrity in Online Labs](#)

Set Guidelines for Communication

Establish how course communication will occur. Methods can include:

- Email
- Announcement
- Discussion board
- Chat rooms

Clearly explain when you will respond to student inquiries. Responding within 24 hours is recommended.

Be Transparent

Transparency is important—especially in an online environment. Make learning outcomes available from the first day of class and refer to them often.

Students should understand how assessments and assignments address desired learning outcomes. Communicate how student work will be assessed.

- Rubrics
- Checklists
- Examples of previous student work

Set Expectations for Academic Integrity

Explain your expectations about different types of assignments:

- Open book/open note
- Community/group projects
- Proctored
- Peer-reviewed

Use plagiarism detection technology to ensure work is your students' own. Provide clear guidelines for acceptable ways of getting assistance with assignments, correctly citing sources, and preparing for assessments.

Tell Students How to Get Help

Provide students with a list of contacts in case difficulties or challenges arise, including:

- Technical problems with personal computers or mobile devices
- Learning management system (LMS) issues
- Customer service for a vendor-supplied lab kit
- Student disability services
- Tutoring services

PART 4:

Working with Carolina

Carolina has the infrastructure and flexibility to build lab kits the way you want them and deliver them to your students at the time and price you need.

We're here to help you begin your free course design. Choose from more than **200 investigations in 8 subjects**—biology, microbiology, chemistry, allied health, anatomy and physiology, physics, geology, and environmental science.



"Students have told me how much they enjoy doing the labs and how the labs help them learn the material and do well in the class."

—Dr. Jennifer McCall,
University of North
Carolina-Wilmington



The Carolina Distance Learning® Course Design Cycle



Starting from Scratch?

We partnered with [Odigia](#) to provide a complete distance learning solution that includes digital learning and teaching tools and safe, effective hands-on lab kits for home use.

Available in **chemistry** and **biology**, the complete course kits:

- Create an immersive, engaging, and affordable distance learning experience
- Go beyond the textbook with digital learning and teaching tools
- Work seamlessly with your LMS or run independently
- Can be customized to fit your needs—Carolina Distance Learning Specialists are available to help you design a lab kit that matches your learning outcomes



Carolina Distance Learning® Kits

Choose from more than 200 hands-on investigations that align with your science course requirements.

<p>Biology Series</p> <p>Explore the Kit</p>	<p>Chemistry Series</p> <p>Explore the Kit</p>	<p>Anatomy & Physiology Series</p> <p>Explore the Kit</p>	<p>Microbiology Series</p> <p>Explore the Kit</p>
<p>Physics Series</p> <p>Explore the Kit</p>	<p>Environmental Science Series</p> <p>Explore the Kit</p>	<p>Allied Health Series</p> <p>Explore the Kit</p>	<p>Geology Series</p> <p>Explore the Kit</p>

Get Started Today

Send us your syllabus. We'll match labs to your learning outcomes. Then we'll schedule a call to talk about the recommendations and make changes based on your feedback, giving you complete flexibility. You make the final decision as to what your kit includes.

Submit Your Syllabus

Call: 800.334.5551

Email: distancelearning@carolina.com