

**Discipline Faculty Professional  
Development Webinar**

***Creating Engaging  
Remote Web-based Labs***

***Dr. Farah Bennani***

**Wednesday, July 16, 2014  
via Blackboard Collaborate**

# Farah Bennani Bio



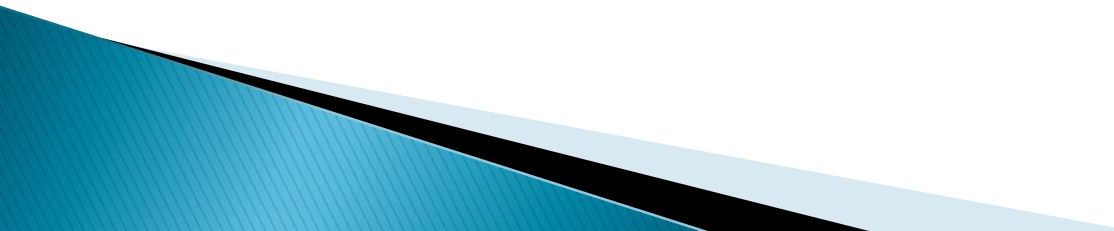
- ▶ Farah Bennani is the college wide chair, online learning, for math, science, allied health, and psychology at Front Range Community College. Bennani teaches microbiology, anatomy, physiology and general college biology for health sciences students, as well as science of biology for non-biology majors. In addition to her doctorate of science in microbiology, Bennani holds a patent for her research study for her doctorate; an advanced studies certification; a bachelor of science in animal biology and option immunology; and a degree in computer science as an analyst-programmer. She was recognized by Who's Who Among America's Best Teachers in 2007 and Marquis Who's Who and Cambridge Who's Who for Excellence in Higher Education in 2008. She received the Master Teacher Award in 2009 at Front Range Community College (CO) and the Online Faculty Award of the Year in 2010 at Community College of Denver. She is also an affiliate faculty member at Regis University in Colorado.

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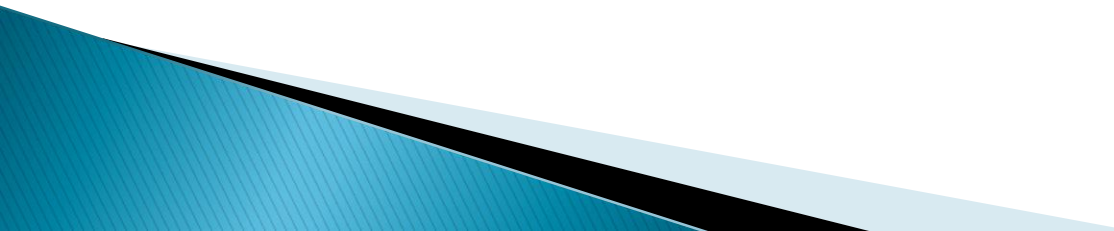


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# Topical outlines

- ▶ 1. Identifying the lab learning objectives.
  - ▶ 2. Selecting applicable background information.
  - ▶ 3. Insuring that the learning objectives drive the sequence of lab activities and questions.
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# Topical outlines

- ▶ 4. Why questions poised are constructed using an inquiry-based model.
  - ▶ 5. Why formative questions are used for procedural exercises.
  - ▶ 6. Why summary questions at the end of each lab are more summative.
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# 1. Identifying the lab learning objectives.

a- What do students need to know and understand by the end of the lab?

b- What students should be able to do after performing the lab experiments?

c- What specific learning outcomes students need to acquire from a specific procedure?





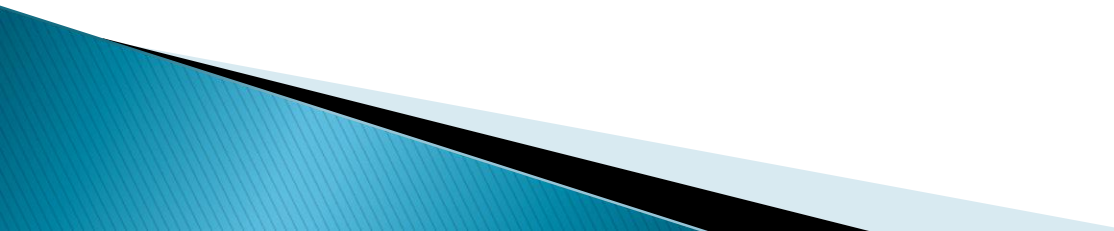
# 1. Identifying the lab learning objectives.

d- The selected learning objectives need to constitute the foundation for a meaningful assessment.

e- The learning objectives need to be precise and measurable.



## 2. Selecting applicable background information.


- ▶ Textbook independent.
  - ▶ Contains background information to help students understand the information related to the materials they will be using in the lab.
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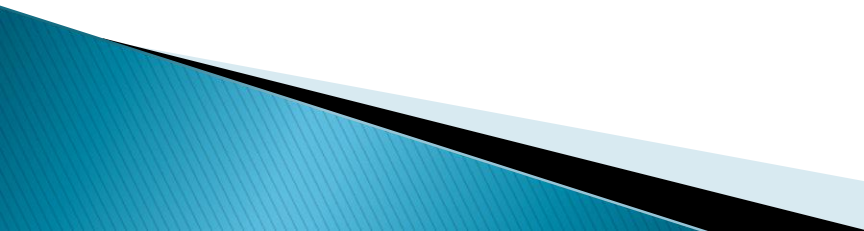
**3. Insuring that the learning objectives drive the sequence of lab activities and questions.**



## 4. Why questions poised are constructed using an inquiry-based model?

- ▶ Students centered.
  - ▶ Focus on the “**How**” rather than “What”.
  - ▶ Help students use the content as a mean to develop information literacy.
  - ▶ Help students learn to develop problem-solving skills.
  - ▶ Learn **things** rather than about things through investigations.
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## 4. Why questions poised are constructed using an inquiry-based model?

- ▶ Questions are constructed in sequences so so that knowledge builds.
  - ▶ Require students to use other resources to be able to answer questions.
  - ▶ Active engagement of students → Depth of knowledge acquisition
  - ▶ This approach increase students' achievement.
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# 5. Why formative questions are used for procedural exercises?


## \* Pre-lab Exercises:

- When appropriate, students are asked to formulate a **hypothesis** before starting any lab procedure.

## \* Lab exercises:

- Students perform the lab experiment and gather the data.
- Students are asked
  - to check if their results are in correlation with their prediction
  - to accept or reject the hypothesis using the data from the lab.

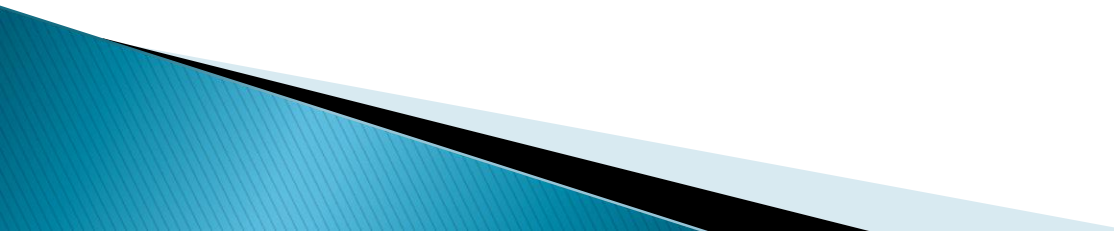
## 6. Why summary questions at the end of each lab are more summative?

- ▶ Reinforce what was covered in the lab.
  - ▶ More in depth application of information.
  - ▶ Broaden the students perspective.
  - ▶ Develop their critical thinking skills.
  - ▶ Be able to tie the different part of the puzzle together into the big picture.
  - ▶ Help students understand that the body functions as one entity.
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# Example

# HEMATOLOGY LAB

## Learning Objectives:

- ▶ know the function of each formed element in the blood.
  - ▶ Identify and distinguish between the different kinds of formed elements in the blood
  - ▶ Measure the relative size of the certain cells.
  - ▶ Identify, distinguish and measure the size of healthy red blood cell and sickle-celled ones.
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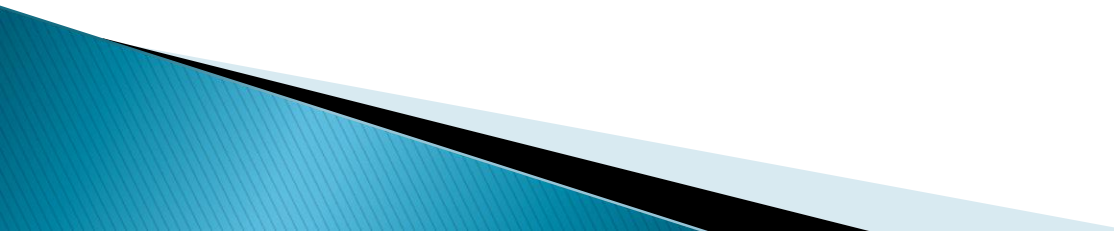


# HEMATOLOGY LAB

## Learning Objectives:

- ▶ Identify, distinguish and measure the size of healthy red blood cell and Thalassemia majors ones.
- ▶ Identify, distinguish and measure the size of healthy white blood cell and infectious mononucleosis ones.
- ▶ Explain the basis for blood typing and matching for blood donation, and identify appropriate blood donors for a given recipient.


# HEMATOLOGY LAB

- ▶ **Exercise 1:** Microscopic Examination of the Formed Elements of Blood
  - ▶ **Exercise 2:** Normal RBC and Sickled cells microscopic observations
  - ▶ **Exercise 3:** Normal RBC and Thalassemia Majors microscopic observation
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# HEMATOLOGY LAB

- ▶ **Exercise 4:** Normal WBC and Infectious Mononucleosis microscopic observation
- ▶ **Exercise 5:** ABO-Rh Blood Typing

# Summary Questions

- 1- Which of the formed elements are referred to collectively as granulocytes?
  - 2- Which of the formed elements are referred to collectively as agranulocytes?
  - 3- What is the difference between an antigen and an antibody?
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# Summary Questions

3- When a patient is admitted to the hospital, one of the first procedures that health professionals perform is a blood draw. One lab value that is checked is a white blood cell (WBC) count. If the WBC count is elevated, this could indicate the presence of inflammation. Further analysis (called a differential) is performed to determine the relative prevalence of different types of white blood cells and the potential cause of the inflammation. What might be causing the inflammation if:

- a- Neutrophils were elevated? Explain your reasoning.
- b- Lymphocytes were elevated? Explain your reasoning.
- c- Eosinophils were elevated? Explain your reasoning.

**Thank you**

**Q & A**