

# Midterm - INTD262

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December 6, 2024

## 1 Unit 3

1. Recall the fascinating story about psychological research, in which the author shares that 67 percent of psychologists who were asked to share their data did not share it. (a) Were the rates of error higher or lower in the studies for which the authors did not share data? (b) In whose favor were the errors?

There was a higher error rate when authors did not share data. 96% of these errors were in the scientists' favor.

2. "Recent research in behavioral economics has shown that groups are often better than individuals at finding errors in reasoning." (a) Why do you think this is the case? (b) Can you give an example of the wisdom of crowds thus far in our study of Latin American science?

A. Multiple minds mean you have differing mental strengths and abilities, leading some to see mistakes that others may not see.

B. The clearest example of this comes from the idea of peer review from scientific journals.

3. Recall the story of cold fusion. (a) List three facets of the peer review process that went wrong in this episode. (b) How long, from start to finish, did it take for the scientific community to sort out the errors in the cold fusion research?

A. 1. No peer review. 2. They did not attempt to replicate the study. 3. Announced their findings to the public before the prior two steps.

B. It took them two months to sort out the errors.

4. Note that we encountered several examples of viceregal engineers becoming Latin American leaders. (a) What are some examples of professions that involved modern technical skill in Río de la Plata and Perú? (b) What is the primary profession of modern US leaders, for example, elected to The United States Congress?

A. Mining Experts and architects are some examples of professions that required modern technical skills.

B. Most modern politicians are lawyers.

5. José Mariano Mociño and others were ordered by the Mexican viceroy on an expedition to Nootka Island. What was the purpose of the expedition? (Take INTD255 to learn more!)

This group was drafted to explore the animal, mineral, and plant wealth of the island, and see if anything could be commercialized.

6. In Perú, we must take note of the work of Hipólito Unánue. (a) What are some of his other scientific contributions? (b) In Nueva Granada, we must take note of the work of José Celestino Mutis. What are some of his main contributions?

A. Hipolito Unanue founded the Anfiteatro Anatomico and the San Fernando Colegio de Medicina.

B. Jose Mutis was the director of the Expedicion Botanica.

7. (a) When did Latin American wars of independence begin, approximately? (b) Give some examples of scientists and engineers who fought and died for their countries.

A. The Latin American wars for independence began in 1810.

B. Some examples of scientists who fought for their countries are Casimiro Ramon Chovel and Fransisco Caldas.

## 2 Unit 4

1. How long after Semmelweis's solution to childbed fever was germ theory introduced?

Germ theory was introduced thirty years after Semmelweis' theories.

2. Where did the practice of autopsies begin? In what way does performing an autopsy fit with the scientific attitude?

Autopsies were introduced in the early 19th century. They fit with the scientific attitude because they represent checking data, and that theories are correct.

3. (a) Do you think the discovery of penicillin was an accident? Why or why not? (b) Louis Pasteur is quoted as saying "chance favors the prepared mind." What did he mean by this? (c) In light of (a) and (b) do you regard the discovery of cinchona as accidental or scientific?

A. I do believe the creation of penicillin was an accident, as it was not the original purpose of Fleming's experiment.

B. I believe that the quote means that change is an inevitability, especially in research, so it is best to be prepared for it.

C. I do believe that Chinchona trees' use was an accident.

4. What event catalyzed the formation of the Establecimiento de Ciencias de Médicas in 1833?

The closure of the Royal University of Mexico caused the establishment of the Establecimiento de Ciencias Médicas.

5. (a) List some reasons the authors give to explain why medical reforms were slow to materialize in Nueva Granada, relative to the struggle for reform in Nueva España. (b) Who led the medical reform process in Nueva Granada in the 18th century? (c) When and where was the Facultad de Medicina reestablished in Nueva Granada, and what happened next?

A. Medical reforms were slower to materialize in Nueva Granada because there was a lack of existing institutions and a weaker economy.

B. Jose Mutis led the medical reforms.

C. The Facultad de Medicina was reestablished in New Granada in 1802. It was nonfunctioning.

6. (a) How many medical schools were there in Brazil in the eighteenth century? (b) What happened to the Portuguese Crown in 1807? What influence did this have on medical reform?

A. There were no medical schools in Brazil during the colonial period.

B. In 1808, Portugal went to war with France. This led to an increased focus on medical reform.

7. As the generation of doctors in Columbia returned from France in the late 19th century, what three cultural institutions did they establish to enhance medical practice?

As the doctors returned, they created medical schools, medical journals, and medical societies.

8. **Triangulation** Suppose you observe a distant mountain from a flat plain. Suppose you walk a baseline of 1 km, perpendicular to the direction towards the mountain. The difference between the compass headings to the mountain at either end of the baseline is 5 degrees. How far away is the mountain?

$$\frac{1}{2\tan(5/2)} = 11.45 \text{ kilometers away}$$

9. **Latitude and Longitude** (a) Suppose two cities lie along a constant line of longitude. If we measure a change of 30 minutes (0.5 degree latitude) between them, how far apart are they, in km? (b) Suppose two cities lie along a constant latitude of 45 degrees North. If they are 600 km apart, what is the change in longitude between them?

A.  $.5 \times 111.133 = 55.57$  kilometers.

B.  $(40,008/360) \times \cos(45) = 7.64$

### 3 Unit 5

1. (a) When were the first medical journals published in Columbia? (Give a few examples). (b) Compare this time frame to the publication of the first mining, chemistry, and physics journals in Mexico. (c) How, or through whom, were these journals connected to medical schools in Columbia?

A. The first medical journal in Columbia was La Lanceta, and it was published in 1852. Another example is La Gaceta Medica de Columbia.

B. The first medical journal in Mexico was published in 1841.

C. The Facultad de Medicina of the Universidad Nacional de Colombia was founded by Antonio Vargas Reyes, who was behind the Lanceta and Gaceta.

2. In 1833, two Enlightenment period institutions were merged into the beginnings of a modern medical school in Mexico. What were the three institutions?

Real y Pontifica Universidad de Mexico and the Escuela de Cirugia would merge into the Establecimiento de Ciencias Medicas.

3. Consider our major in kinesiology and nutrition science (KNS). To what extent would we consider this medicine, in the absence of modern germ theory? That is, are there other holistic forms of medical development we encountered in Latin American history besides vaccines and drugs that fight bacteria and viruses?

I think they would be considered medicine, as there is research and debate that goes into these fields. There were still prevalent spiritual theories of medicine in Latin America.

4. (a) What historical event in 1808 led to the creation of the first medical and surgical schools in Brazil (b) When did Brazil declare independence from Portugal? (c) How long after independence did the Brazilians introduce modern reforms into the medical schools in Bahia and Rio de Janeiro?

A. The event that caused this was the arrival of the Portuguese royal family in Brazil.

B. Brazil declared independence on September 7th, 1822.

C. Reforms did not take place into the 1830s and 40s.

5. In Columbia, the Escuela de Medicina was founded in 1865. It was centered on hospital-based anatomy and physiology. Consider the following quote from the text: "The second phase is notable for the slow progress of laboratory-based medicine, especially etiopathological procedures. Its final stage, starting in the 1950s, is defined by the introduction of Flexnerian reforms from North American technological medicine." What does quote mean by Flexnerian? Think back to our reading in The Scientific Attitude.

Flexnerian refers to the Flexner report, a report by Abraham Flexner. It was a analysis of the quality of medical schools followed by suggestions for reform.

6. (a) What was a major driver of modern epidemiology in 19th Century Brazil? (b) What was the purpose of the Tropicalist School of medicine? (c) When did the bubonic plague enter Brazil, and how did the Brazilians respond?

A. Brazil wanted social change, and to move away from "manguingueiros."

B. The Tropicalist school was created to study disorders caused by warmer climates.

C. The bubonic plague came in 1899. They performed autopsies on victims of the plague.