ULIB 103: Introduction to STEM Library Research

Course Information

Credit hours: 2
Prerequisites: None
Instructor: Kelly Diamond, MA, MLIS. Head of WVUL Student Success and Instruction
Class meets: Online from August 22nd – October 10th

Faculty Contact Information

Office: Evansdale Library, room 104
Student Help Hours: M and TH: 1:00 – 2:00 PM
Email: Kelly.diamond@mail.wvu.edu

Introduction

This class focuses on the concepts and logic of information access including using the libraries' online catalog, various databases, and the Internet to find quality STEM information. It incorporates hands-on practice with electronic resources for research, synthesis, and evaluation of information and includes discussion of library research and publishing ethics. Students will produce information products for a variety of STEM audiences.

This course will be taught entirely online using a modified flipped classroom model. You will be assigned homework, take quizzes, and complete activities. All of the coursework will be focused on completing your final assignments.

ULIB 103 STEM Course Outcomes

At the end of the course, students will be able to:

1. Recognize that authoritative STEM content may be packaged in a variety of formal and informal formats and mediums;
2. Critically evaluate and assess the fit between an information product's creation process and a particular information need;
3. Develop, in their own creation processes, an understanding that their choices impact the purposes for which the information product will be used and the message it conveys
4. Recognize that all information, personal and published, has ethical and economic value which affects its production and dissemination

Course Policies

Deadlines:

This class will have twice-weekly deadlines, on Tuesdays and Fridays. Please check each module for exact days and times. **If you ever have a problem with an assignment, email your instructor ahead of the deadline.** Accommodations may be made before a deadline, but not after. Please look ahead and make sure that you keep yourself current with the upcoming projects and assignments.

Instructional Materials & Technology

Textbook:

This class does not require any textbooks. Reading materials are available within eCampus. eCampus:

This course assumes that you are comfortable performing basic tasks within eCampus, such as sending attachments, taking quizzes, and posting to course discussion boards. The WVU Information Technology Services (ITS) has an excellent help page for students: http://ecampusinfo.wvu.edu/student-ecampus- faqs.

Email:

Your instructor will communicate with you *only* through WVU eCampus or your MIX account; therefore, please check WVU eCampus and MIX frequently.

Technology:

Your final assignment for the class requires you to create two projects: a conference-style poster and instructional materials (infographic, video, brochure, etc.) for a middle-school audience. Microsoft PowerPoint has poster and infographics templates (select File > New > Poster or Infographics). You can also use Canva (https://www.canva.com/) for brochures as it is free and user-friendly. Please contact your instructor about the technology that you will use.

Course Structure

This course has been organized into modules. Each module contains three steps.

Step 1– Homework:

You will read short selections or watch videos related to the content for that module.

Step 2–Quiz:

You will then take a timed multiple-choice quiz on the assigned readings or videos. You will need to complete the quiz to open the module.

Step 3– Exercises and Activities:

You will then use what you learned from the homework to complete exercises and activities. These activities will be used to complete your technical poster and information artifact.

Assignment Descriptions

More detailed descriptions will be found in the course modules.

Quizzes (25% of final grade)

For most modules, you will take a multiple-choice quiz. The quiz is to test your comprehension of the homework and to help you retain information from the homework. **You will get two chances to take the quiz**; your highest score will be the one recorded.

Exercises (25% of final grade)

For each module, you will complete activities to demonstrate your ability to apply the information from that week's homework. These assignments will be used later to complete your final projects.

Poster and Instructional Materials (30% of final grade)

For your final assignment, you will create a conference style poster explaining the science of an everyday thing or phenomenon to your professors. You will also create instructional materials explaining this same concept to novice learners, middle-school students. Information from your course homework will be used to create these projects.

Reflection Memo (15% of final grade)

For your final assignment, you will write a memo to your instructor reflecting on your research process.

Plagiarism Avoidance Tutorial (5% of final grade)

You will take an online tutorial about avoiding plagiarism.

Assignments & Percentage of Final Grade:

Quizzes: 25%

Weekly Exercises: 25%
Plagiarism Avoidance Tutorial: 5%
Poster: 15%
Artifact: 15%
Reflection Memo: 15%

Grade Determination:

100-90% = A
89-80% = B
79-70% = C
69-60% = D
0-59% = F

Final Assignments

Academic Poster

Topic:

Research the science of an everyday thing or phenomenon and explain it to two different audiences. More detailed descriptions will be found in the course modules.

Topic examples:

- Why do we add baking powder to cakes?
- Would solar panels work in WV?
- Why does a curveball curve?
- Why do cats chase red dots?

Audience:

Your STEM professors or attendees at a scientific conference

Purpose

Provide the scientific explanation of an everyday process or phenomenon and provide current research.

Instructions

Using your topic (the science of everyday process or phenomenon) create an academic poster for either your STEM professors or attendees at a scientific conference

Required Poster Content

- **Title** of Poster and your **name**
- **What** is your process, mechanism or item?
- **Where** would one find this process, mechanism, or phenomenon?

- **How** and **why** does this process, mechanism or phenomenon work? [Feel free to use a diagram. If you borrow one, be sure to cite it.]
- **Define Terms** (use a reference source for this) associated with the process, mechanism or phenomenon.
- **Recent Research**: Briefly summarize one recent article about your topic using the research matrix that you complete. [3-5 sentences]
- What **Professional Organization** is related to your process, mechanism or phenomenon? [Give a brief overview of who they are, website, how they are connected to your process, mechanism or phenomenon, and briefly summarize any ethical codes or standards for their members.]
- Briefly discuss an **Ethical** issue associated with your process, mechanism or item. **References:** at least 3 in citation format (APA, MLA, Chicago, etc.)

Academic Poster Rubric

Final Project Rubric: Academic Poster Criteria	
Audience Awareness (25%)	Poster displays detailed evidence of creator's insight and awareness of the audience. The information displayed demonstrates thoughtful decisions in regard to the audience. Poster needs no or very minor editing.
Content (50%)	Poster contains credible and audience-appropriate information from a variety of sources with specific thought given to the needs of the audience. Poster needs no or very minor editing.
Reference Box: (20%)	Sources used in the poster's creation are clear and obvious to a viewer. Citations need no or very minor editing.
Clarity (5%)	The poster's content is clear to a viewer / reader. The reader / viewer would have no questions about the content presented. Only minor corrections might be needed.

Instructional Materials

Audience

Middle School Science Students

Purpose

Provide the scientific explanation of an everyday process, mechanism, or phenomenon to middle school science club students.

Instructions

Using your topic (the science of an everyday process, mechanism, or phenomenon), create instructional materials (such as a PowerPoint slide deck) for students in a middle school science club

Required Presentation Content

- **Title** of Poster and your **name**
- **What** is your process, mechanism or item?
- **Where** would one find this process, mechanism, or phenomenon?
- **How** and **why** does this process, mechanism or phenomenon work? [Feel free to use a diagram. If you borrow one, be sure to cite it.]
- **Define Terms** (use a reference source for this) associated with the process, mechanism or phenomenon.
- **Where** can students learn more about your process, mechanism, or phenomenon?
- **References:** at least 3 in a citation format (APA, MLA, Chicago, etc.)

Instructional Materials for Middle School Students	
Audience Awareness (25%)	Instructional material displays detailed evidence of creator's insight and awareness of the audience. The information displayed demonstrates thoughtful decisions in regard to the audience.
PowerPoint: \Content (50%)	Instructional material contains credible and audience-appropriate information from a variety of sources with specific thought given to the needs of the audience.
Sources & Citation (20%)	Sources used in the Instructional material are obvious to a viewer. Citations need no or very minor editing.
Clarity (5%)	The Instructional material's content is clear to a viewer / reader. The reader / viewer would have no questions about the content presented. Only minor corrections might be needed.

Reflection Memo

Audience:

Your ULIB 101 Instructor

Purpose

Explain and reflect on your research as well as your processes for creating the Academic Poster and the PowerPoint for Middle School Science Students

Instructions

- Write a 1 - 2 page memo explaining and reflecting on your research process and the decisions and choices you made as you created your presentations.
- Include a References or Works Cited page of the sources that you used in your academic poster and instructional materials.

Reflection Memo Sections

Reference List or Works Cited of sources used to create the academic poster and the instructional materials middle school science students.

1. Explain how you found these sources that you used:
    a. Where did you find them?
    b. How did you search for them?
    c. What trouble-spots did you encounter
    d. How did you address these trouble-spots?

2. Explain how and why you selected the sources that you used, Think about not only credibility but also their appropriateness for your audience.
3. Explain your thought process regarding the content, the design, and the presentation of your presentations in light of your audience's needs. Specifically address the differences between the two audiences.

Reflection Memo Rubric

Reflection Memo Criteria	
Reference List or Works Cited Page (15%)	Citations are correct. Writer clearly understands the conventions.
Finding Sources (25%)	Writer supplies specific and detailed examples. The process the writer used to find sources is very clear to a reader. Description needs no or very minor editing.

Selecting Sources (25%)	Writer supplies specific and detailed examples. Process of selecting sources is very clear to a reader. Description needs no or very minor editing.
Audience Awareness (25%)	Writer supplies specific insights and thoughtful reflection regarding content choices for a specific audience. Process is clear to a reader. Description needs no or very minor editing.
Readability (10%)	Memo is very easy to read; it contains only minor issues which do not distract a reader.

Course Outcomes Alignment to Assignments

COURSE OUTCOME	ASSIGNMENT
Recognize that authoritative STEM content may be packaged in a variety of formal and informal formats and mediums	Reflection Memo
	Reflection Memo
Critically evaluate and assess the fit between an information product's creation process and a particular information need;	Middle School Instructional Materials
	Academic Poster
Develop, in their own creation processes, an understanding that their choices impact the purposes for which the information product will be used and the message it conveys.	Reflection Memo
	Middle School Instructional Materials
	Academic Poster
Recognize that all information, personal and published, has ethical and economic value which affects its production and dissemination	Reflection Memo
	Middle School Instructional Materials
	Academic Poster

ULIB 103 STEM Course Schedule

MODULE	CONTENT	Module Objectives
Orientation & Module 1	Introduction to the Course	Students will be able to: • Summarize course content and policies • Navigate course in eCampus • Identify reasons why communication is important for STEM careers
Module 2	Choose and Narrow Topic	Students will be able to: • Define how the terms *process*, *mechanism*, and *phenomenon* are used in this course • List elements of a concept map • Create a concept map • Draft appropriate topics
Module 3	Using Wikipedia Effectively (Background Information / Narrowing Topic)	Students will be able to: • Describe how Wikipedia evaluates its articles • Use Wikipedia to find background information on their topic • Use Wikipedia references to find sources on their topic • Use Wikipedia to create a list of search terms about their topic
Module 4	Fact-Checking, Bias, and Agenda	Students will be able to: • List fact-checking steps • Define the terms *fact, opinion, bias,* and *agenda* as described in this course • Apply fact-checking steps

		• Evaluate text for bias and agenda.
Module 5	Search Terms and Reliable Web Sources	Students will be able to: • Describe how word choice effects search results • Generate a selection of appropriate search terms for their topic • Using appropriate source-appropriate search terms and strategies, find appropriate web sources for their topic
Module 6	Establishing Credibility in STEM Research	Students will be able to: • Describe the peer review process • Explain the importance of reproducibility • Explain what withdrawal, retraction, and removal means in regard to journal articles.
Module 7 (Midterm)	General STEM Databases	Students will be able to: • Use Web of Science to find and select appropriate articles for their topic • Use Science Direct to find and select appropriate articles for their topic
Module 8	Specialized STEM Databases	Students will be able to: • Select a database that is relevant to their field and chosen topic • Use a specialized database to find and select appropriate articles for their topic
Module 9	Creative Commons / Copyright	Students will be able to:

		• Articulate the basics of copyright law • Articulate the basics of Creative Commons licensing • Find and appropriately use a Creative Commons image
Module 10	Citations / Avoiding Plagiarism	Students will be able to: • Articulate the definitions of plagiarism and academic dishonesty • Identify and apply practices for avoiding plagiarism • Draft a References List
Module 11	STEM Communication for Audiences (Draft Final Projects)	Students will be able to: • Articulate elements of effective STEM communication • Apply elements of effective STEM communication to their final assignments
Module 12	Drafts and Feedback	Students will be able to: • Evaluate partner's final assignments and offer constructive feedback
Module 13	Final Projects Due	