

2020-2021 Biological Sciences: Health Sciences Assessment Plan

1. Program Mission Statement: The Biological Sciences: Health Science major provides students with a foundation in the health sciences and prepares them for a variety of health-related careers including medicine, veterinary science, physical therapy, and many of the allied health professions. Students learn to think critically when evaluating data and deliberating on ethical and justice issues related to the health sciences and society. A commitment to meeting and resolving health challenges is instilled. Students learn to communicate in both written and spoken form and to work collaboratively.

2. Program Goals

1. Provide an interdisciplinary undergraduate program that prepares students with the knowledge and skills necessary to pursue a career within the health professions.
2. Provide guidance in health profession career exploration.
3. Train students to communicate in a clear, coherent, and effective manner in both written and oral form.
4. Provide students with the knowledge and skills to advance personal and societal health and wellness and instill a commitment to meeting current and arising challenges in the healthcare field.
5. Educate students to develop technological skills, think critically, use quantitative reasoning in evaluating data related to health issues and healthcare delivery in their local and global community. This includes ethical conflicts surrounding particular medical theories, technologies, applications, and policies.
6. Help students to understand the importance of multiple perspectives in the health sciences through collaborative learning where different opinions are included, valued, respected, and considered.

Alignment of Health Sciences Goals with Wells Goals:

| | Health Sciences Student Learning Goals | | | | | |
|-----------|--|---|---|---|---|---|
| Wells APG | 1 | 2 | 3 | 4 | 5 | 6 |
| Content 1 | | | | ✓ | ✓ | |
| Content 2 | | | | ✓ | ✓ | |
| Content 3 | ✓ | ✓ | ✓ | | ✓ | |
| Skills 1 | | | ✓ | ✓ | ✓ | |
| Skills 2 | | | | | ✓ | |
| Skills 3 | | | | ✓ | ✓ | |
| Skills 4 | | | | ✓ | | ✓ |
| Skills 5 | | ✓ | | | | |
| Skills 6 | | | | | ✓ | ✓ |

3. Learning Objectives (1.1, 1.2, etc.) and 4. Learning Outcomes (a, b, c, etc.)

Goal 1. Provide an interdisciplinary undergraduate program that prepares students with the knowledge and skills necessary to pursue a career within the health professions.

- 1.1 Students will understand and apply basic biological and chemical principles to health-related problems and issues.
 - a. Define and apply biological and chemical concepts on exams and assignments.

- b. Extrapolate and form conclusions from data in lab reports and assignments.

1.2 Students will understand the biological, psychological, and sociocultural factors that influence behavior, wellness, health, and healthcare.

- a. Successfully complete core social science course(s) in the curriculum.
- b. Demonstrate an understanding of both individual and group differences in behavior in written assignments and exams.
- c. Describe and define social factors that influence behavior, the way we think about ourselves and others, as well as how we interact with others as healthcare practitioners through reflection papers, essays, and other written assignments.
- d. Demonstrate an understanding of the biological bases of behavior through relevant coursework in psychology (e.g., Neuropsychology, Health Psychology) and/or biology (e.g., Animal Behavior).

1.3 Students will understand and appreciate the interconnections between healthcare and environmental practices.

- a. Analyze the effect of health care practices on the environment and vice versa through case studies and real world scenarios.
- b. Explain the impact of environmental conditions on an individual's and a community's health and wellness through case studies.

Goal 2. Provide guidance in health profession career exploration.

2.1 Students understand the varieties and nature of various healthcare professions and assess the goodness-of-fit of these careers to their own personal and professional goals.

- a. Describe the responsibilities of various health professions.
- b. Write self-reflective essays on their individual attributes, strengths and weaknesses, and match to career choice.

2.2 Students understand how various health professionals work together as a team to provide a system of healthcare to the individual and the community.

- a. Exposure to a wide variety of healthcare professionals who describe their own professional and personal paths, job requirements, and interactions with others in providing healthcare services to others (e.g., through RHIP; guests in HS 100 and a variety of other courses in the curriculum).
- b. Describe how various health professionals interact through written assignments and oral presentations.

2.3 Students will understand the admissions requirements and process for their chosen health profession

- a. Design an academic training and professional/career action plan.
- b. Conduct inquisitive and thoughtful interviews with healthcare professionals.

2.4 Students learn to act professionally, embrace diversity, and gain hands-on experience in a healthcare setting.

- a. Complete an experiential learning experience in the health sciences under the supervision of a healthcare professional.
- b. Students describe and reflect on their experiences through a paper, poster, and/or oral presentations.
- c. On-site supervisors evaluate interns for professionalism, adaptability, independence and collaboration, communication, etc.

Goal 3. Train students to communicate in a clear, coherent, and effective manner in both written and oral form.

3.1 Students demonstrate effective written communication.

- a. Use, evaluate, and appropriately cite the primary literature in lab reports, papers, posters, and a senior thesis.
- b. Use appropriate writing styles in written assignments.

c. Write and describe their own scientific work in lab reports.

3.2 Students demonstrate effective visual and oral communication to their peers, the Wells community, and the general public

- a. Present work in an oral presentation format that includes visual representations.
- b. Present work visually and orally via a poster presentation format.
- c. Convey ideas and participate constructively in classroom discussions.

Goal 4. Provide students with the knowledge and skills to advance personal and societal health and wellness and instill a commitment to meeting current and arising challenges in the healthcare field.

4.1 Students understand the role of public health officials in community assessment and public education

- a. Conduct and analyze data from surveys on community healthcare challenges
- b. Design and create a Public Service Announcement for the Wells community

4.2 Students analyze and propose solutions to current and arising healthcare challenges

- a. Write and present senior theses on healthcare topics
- b. Read case studies and analyze real world scenarios

Goal 5. Educate students to develop technological skills, think critically, use quantitative reasoning in evaluating data related to health issues and healthcare delivery in their local and global community. This includes ethical conflicts surrounding particular medical theories, technologies, applications, and policies.

5.1 Students will develop an understanding for the ethical issues that surround particular technologies and applications.

- a. Consider the ethics of technologies by evaluating data and ideas presented in journal articles, case studies, and books.
- b. Review the current literature to write and present senior theses on healthcare topics.

5.2 Students will learn new technologies and how they can be applied.

- a. Complete post-labs, lab reports, and presentations that require students' understanding of the technology.
- b. Complete quizzes on the use and applications of the technologies.

5.3 Students will use statistical methods to effectively analyze data.

- a. Successfully complete a course in statistics.
- b. Make and evaluate graphs
- c. Complete assignments that analyze typical statistics problems involving both description and inference.
- b. Students identify and execute an individual statistics project using software

Goal 6. Help students to understand the importance of multiple perspectives through collaborative learning where different opinions are included, valued, respected, and considered.

6.1 Students will understand cultural differences and multicultural perspectives.

- a. Students consider the ethics of health science issues in society through discussions of case studies, media depictions, and real world scenarios that explore opposing ethical viewpoints

6.2 Students will learn to work collaboratively.

- a. Work in groups on papers, presentations, and lab experiments
- b. Provide constructive peer feedback on papers, projects, and presentations
- c. Work with people outside the Wells community
- d. Complete a health sciences internship

6.3 Students will understand social stratification and access to resources that influence well-being.

- a. Students write reflective essays on course readings
- b. Complete projects within the social sciences.

5. Means of Assessment of Outcomes

Student work will be assessed by the faculty member(s) teaching the targeted courses. Faculty members will evaluate if the students learned what was expected, based on each assignment (paper, presentation, group work, etc). The “Data Location” for all assessment measurements are in “faculty files”.

| Goal #1. Provide an interdisciplinary undergraduate program that prepares students with the knowledge and skills necessary to pursue a career within the health professions. | | | | |
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| Objective | Outcome | How Outcome is Measured | Measurement Tool | Success Criteria |
| 1.1 Students will understand and apply basic biological and chemical principles to health-related problems and issues. | a. Define and apply biological and chemical concepts on exams and assignments. | Course Exams in Biol114L; Biol130L; Biol226L; Biol304; Biol330L; Biol331; Biol310L; Chem 107; Chem 108 Chem 213; Chem 214; Chem 323; Chem 326 | Answer Keys/Locally developed rubrics | 70% received C or higher |
| | | Case studies in Biol130L; Ebola and Influenza Case studies in HS100 | Rubric/Answer Key | 70% received C or higher |
| | | Assignments in Biol226L, Biol201L, and HS385 (Principles of Human Nutrition) | Answer Key | 80% received C or higher |
| | | Case studies in Chem323L, Chem326; Chem303, HS385 (Principles of Human Nutrition) | Locally developed Rubric/Answer Key | 90% received C or higher |
| | b. Extrapolate and form conclusions from data in lab reports and assignments. | Lab Reports in Biol114L; Biol130L; Biol330L; Chem213; Chem214; Chem323L | Answer Keys/Locally developed rubrics | 70% received C or higher |

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| | | Post lab questions in Biol226L | Answer Keys/Locally developed rubrics | 90% received C or higher |
| 1.2 Students will understand the biological, psychological, and sociocultural factors that influence behavior, wellness, health, and healthcare. | a. Demonstrate an understanding of both individual and group differences in behavior in written assignments and exams. | Book papers in PSY206; Final Exam PSY206 | Locally developed rubrics | 90% receive a C of higher |
| | b. Describe and define social factors that influence behavior, the way we think about ourselves and others, as well as how we interact with others as healthcare practitioners through reflection papers, essays, and other written assignments. | Book papers in PSY206; Final Exam PSY206 HS385 (Principles of Human Nutrition)- What governs food choices assignment | Locally developed rubrics | 90% receive a C of higher |
| | c. Demonstrate an understanding of the biological bases of behavior through relevant coursework in psychology (e.g., Neuropsychology, Introduction to Psychology, Biological Bases of Behavior) and/or biology (e.g., Animal Behavior). | | | |
| 1.3 Students will understand and appreciate the interconnections between healthcare and environmental practices. | a. Analyze the effect of health care practices on the environment and vice versa through case studies and real-world scenarios. | Case Study CHEM303 HS385 Principles of Human Nutrition- Impact of food production on the environment | Rubric | 70% received C or higher |

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| | b. Explain the impact of environmental conditions on an individual's and a community's health and wellness through case studies. | Streams of Coal or Streams of Death Case Study in HS100 | Answer Key | 70% received C or higher |
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| Objective | Outcome | How Outcome is Measured | Measurement Tool | Success Criteria |
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Goal #2. Provide guidance in health profession career exploration.

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| 2.1 Students understand the varieties and nature of various healthcare professions and assess the goodness-of-fit of these careers to their own personal and professional goals. | a. Describe the responsibilities of various health professions. | Professional Interviews in HS100 | Locally developed rubrics | 80% received C or higher |
| | | Written summaries of health professional speaker presentations in HS100 | Locally developed rubrics | 80% received C or higher |
| | b. Write self-reflective essays on their individual attributes, strengths and weaknesses, and match to career choice. | 9 Questions assignment in HS100 | Locally developed rubrics | 80% received C or higher |
| | | Final Portfolio Question 1 and 2 in HS100 | Locally developed rubrics | 80% received C or higher |
| 2.2 Students understand how various health professionals work together as a team to provide a system of healthcare to the individual and the community. | a. Exposure to a wide variety of healthcare professionals who describe their own professional and personal paths, job requirements, and interactions with others in providing healthcare services to others | Written summaries of health professional speaker presentations in HS100 | Locally developed rubrics | 80% received C or higher |
| | | Community presentation in OCS285 Rural Health Immersion Program | Locally developed rubrics | 85% received S |
| | b. Describe how health professionals interact through | Professional Interviews in | Locally developed rubrics | 80% received C or higher |

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| | written assignments and oral presentations. | HS100 and OCS285 Rural Health Immersion Program | | |
| | | Final Portfolio Question 1 in HS100 | Locally developed rubrics | 80% received C or higher |
| | | Career Plan Question 1 in HS100 | Locally developed rubrics | 80% received C or higher |
| 2.3 Students will understand the admissions requirements and process for their chosen health profession | a. Design an academic training and professional/career action plan. | Career Plan assignment and Final Portfolio Question 3 in HS100 | Locally developed rubrics | 80% received C or higher |
| | b. Conduct inquisitive and thoughtful interviews with healthcare professionals. | Professional Interviews in HS100 and OCS285 Rural Health Immersion Program | Locally developed rubrics | HS100- 80% received C or higher OCS285- 85% receive S |
| 2.4 Students learn to act professionally, work with diverse others, and gain hands-on experience in a healthcare setting. | a. Complete an experiential learning experience in the health sciences under the supervision of a healthcare professional. | HS290/390 reflection papers and poster presentations | Locally developed rubrics | 90% receive an S |
| | | RHIP participation | Instructor observations | 85% receive an S |
| | | RHIP pre and post survey | Locally developed rubric | 85% receive an S |
| | b. Students describe and reflect on their experiences through a paper, poster, and/or oral presentations. | RHIP community presentation | Locally developed rubric | 85% receive an S |
| | c. Supervisors evaluate interns for professionalism, adaptability, independence, collaboration, communication, etc. | | | |

Goal 3. Train students to communicate in a clear, coherent, and effective manner in both written and oral form.

| Objective | Outcome | How Outcome is Measured | Measurement Tool | Success Criteria |
|---|--|---|---------------------------|---|
| 3.1 Students will demonstrate effective written communication | a. Use, evaluate, and appropriately cite the primary literature in lab reports, papers, posters, and a senior thesis. b. Use appropriate writing styles in written assignments. | HS401 Senior Thesis | Locally developed rubric | 100% receive a C or higher |
| | | Lab reports in Biol130L, Chem213L, Chem214L and Chem323L | Locally developed rubric | 70% receive a C or higher |
| | | BIOL 304L Species papers | Rubric | 70% received C or higher |
| | | BIOL 331 Topic summaries | Rubric | 70% received C or higher |
| | | BIOL 324L Literature reviews Research posters | Rubric | 70% received C or higher |
| | | Mini-review article CHEM326 and CHEM303 | Rubric | 70% of the students demonstrate a passing grade |
| | | Student generated case study HS385 Principles of Human Nutrition | | |
| | | HS100 9 Questions | Locally developed rubric | 70% receive a C or higher |
| | | HS100 Final Portfolio Personal Statement | Locally developed rubric | 70% receive a C or higher |
| | HS100 The Spirit Catches You and Henrietta Lacks Reflective Essays | Locally developed rubric | 70% receive a C or higher | |
| | c. Write and describe their own scientific work in lab reports | Lab reports in Biol130L, Chem213L, Chem214L and Chem323L | Locally developed rubric | 70% receive a C or higher |

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| 3.2 Students demonstrate effective visual and oral communication to their peers, the Wells community, and the general public | a. Present work in an oral presentation format that includes visual representations. | RHIP Community Presentation | Locally developed rubric | 85% receive an S |
| | | HS401 Senior Thesis presentation | Locally developed rubric | 100% receive a C or higher |
| | | BIOL201L Mini conference | Locally developed rubric | 70% receive a C or higher |
| | | Bio310L research presentation | Locally developed rubric | 80% receive a C or higher |
| | | Oral presentations in Chem214L and Chem323L HS385 Principles of Human Nutrition | Rubrics | 70% of the students demonstrate a passing grade |
| | b. Present work visually and orally via a poster presentation format. | HS290/390 Poster presentations | Locally developed rubric | 90% receive an S |
| | | HS401 Senior Thesis Poster presentation | Locally developed rubric | 100% receive a C or higher |
| | | BIOL 324L Research posters | Rubric | 70% received C or higher |
| | c. Convey ideas and participate constructively in classroom discussions. | HS100 Case Study | Locally developed rubric | 70% receive a C or higher |

Goal 4. Provide students with the knowledge and skills to advance personal and societal health and wellness and instill a commitment to meeting current and arising challenges in the healthcare field.

| Objective | Outcome | How Outcome is Measured | Measurement Tool | Success Criteria |
|--|---|-------------------------|--------------------------|---|
| 4.1 Students understand the role of public health officials in community assessment and public education | a. Conduct and analyze data from community healthcare challenge surveys | RHIP Community Survey | Locally developed rubric | 85% receive an S |
| | b. Create a Public Service Announcement for | PSY206 PSA Assignment | Locally developed rubric | 100% receive a passing grade: 35% A 55% B |

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| | the Wells community | | | 10% C |
| 4.2 Students analyze and propose solutions to current and arising healthcare challenges | a. Write and present senior theses on healthcare topics | HS401 Senior Thesis Paper and Presentation | Locally developed rubrics | 100% receive a C or above |
| | b. Read case studies and analyze real world scenarios | HS100 Ebola, Influenza, and Coal Mining Case studies | Locally developed rubrics | 70% receive a C or above |
| | | RHIP Community Assessment Assignment | Locally developed rubrics | 85% receive an S |

Goal 5. Educate students to develop technological skills, think critically, use quantitative reasoning in evaluating data related to health issues and healthcare delivery in their local and global community. This includes ethical conflicts surrounding particular medical theories, technologies, applications, and policies.

| Objective | Outcome | How Outcome is Measured | Measurement Tool | Success Criteria |
|--|---|---|--------------------------|-----------------------------|
| 5.1 Students will develop an understanding for the ethical issues that surround particular technologies and applications | a. Consider the ethics of technologies by evaluating data and ideas presented in journal articles, case studies, and books. | Reflection paper on the book "The Quest for the Cure" CHEM303 | Rubric | 70% receive a passing grade |
| | | Exam Questions on Paper discussions CHEM323L | Answer Key | 70% receive a passing grade |
| | | BIOL 214L History presentations | Rubric | 70% received C or higher |
| | | BIOL226L <i>Rise of the Necrofuana</i> reflection paper | Rubric | 70% receive a C or higher |
| | b. Review the current literature to write and present theses on healthcare topics. | HS401 Senior Thesis | Locally Developed Rubric | 100% receive a C or above |
| 5.2 Students will learn new technologies and | a. Complete post-lab questions lab reports, and presentations that | Biol226L post-lab assignments | Answer Keys | 90% receive a C or above |
| | | Biol310L post-lab assignments | Answer Keys | 80% receive a C or above |

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| how they can be applied. | are dependent on their understanding of the technology. | Post-lab Assignments in Chem213L +214L, Chem323L) | Answer Keys | 70% of the students demonstrate a passing grade |
| | | BIOL 331 Current event presentations | Rubric | 70% received C or higher |
| | b. Complete quizzes on the use and applications of the technologies. | Biol226L homework assignments and test questions | Answer Keys | 80% receive a C or above |
| 5.3 Students will use statistical methods to effectively analyze data. | a. Make and evaluate graphs | Lab reports in Bio130L,, Biol310L, Chem213L, Chem214L, Chem323L | Locally Developed Rubric | 70% receive a C or above |
| | b. Complete assignments that analyze typical statistics problems involving both description and inference | Assignments in MATH 151 and MATH 251 | Answer keys Instructor evaluation of written and computational work. | 70% received C or higher |
| | c. Students identify and execute an individual statistics project using software | Assignments in MATH 151 and MATH 251 | Answer keys Instructor evaluation of written and computational work. | 70% received C or higher |

| Goal 6. Help students to understand the importance of multiple perspectives through collaborative learning where different opinions are included, valued, respected, and considered. | | | | |
|---|---|--|---------------------------|--------------------------|
| Objective | Outcome | How Outcome is Measured | Measurement Tool | Success Criteria |
| 6.1 Students will understand cultural differences and multicultural perspectives. | a. Students consider the ethics of health science in society through discussions of case studies and real-world scenarios that explore different ethical viewpoints | HS100 Reflection Papers | Locally developed rubrics | 70% received C or higher |
| | | HS285 (Bioethics) Reflection on <i>The Spirit Catches You and You Fall Down</i> and Perspectives round table | Locally developed rubrics | 70% received C or higher |

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| | | BIOL 324L Zoo project | Rubric | 70% received C or higher |
| 6.2 Students will learn to work collaboratively. | a. Work in groups on papers, presentations, and lab experiments | Students work in pairs or groups on lab projects in Biol114L, Biol130L, Biol226L, Biol310L,, Biol330L, Biol304L, Chem107L, Chem108L, Chem213L, Chem214L, and Chem313L | Locally developed rubrics | 70% received C or higher |
| | b. Provide constructive peer feedback on papers, projects, and presentations | HS401 Peer reviews of senior theses | Locally developed rubrics | 100% received C or higher |
| | | Peer feedback form submitted after presentations and projects in Chem214L, Chem323L, Chem326 and Chem303 | Rubric | 70% received a passing grade |
| | c. Students work with people outside the Wells community | HS290/390 internship reflection papers and posters | Locally developed rubrics | 80% received C or higher |

6. How Assessment Data will be utilized.

HS faculty will meet at the end of each semester to assess the HS major in terms of meeting our stated goals, objectives, and outcomes. Each faculty member is responsible for assessing her or his own courses and reports on changes made to achieve better alignment with the major's goals, objectives, and outcomes. Each faculty member is expected to have learning objectives clearly stated on course syllabi to facilitate this. Contingent faculty will be provided with the major's assessment plan in order to develop their courses and align their syllabi with the major's mission, goals, learning objectives, and outcomes. HS faculty will examine the measurements for the particular objective(s) we chose as the focus of our assessment work for the year and analyze what the data indicate. If needed, course, program, and assessment materials will be developed to improve student outcomes. HS faculty will also use data to discuss and choose which objectives to focus our assessment on in the following academic year.

7. Curriculum Map (see attached)