Oakland University Assessment Committee
Assessment Plan Template

Step 1: Basic Information

Program Name: Integrated Science, B.A.

School or College your program resides in: College of Arts and Sciences

Program Level (check all that apply):

Undergrad	x
Master's	☐
Doctoral	☐

Date Plan Submitted:

Current Assessment Contact Representative (& E-mail): Ilias Cholis (cholis@oakland.edu), Integrated Science Assessment Chair
Current Department or Program Chair (& E-mail): Andrei Slavin (slavin@oakland.edu), Department Chair
Current Dean (& E-mail): Elaine Carey (carey@oakland.edu)

Step 2: Type of Assessment Plan

Option A. Programs that have an external accrediting agency other than the Higher Learning Commission may be eligible to use their accreditor's response in lieu of following the UAC's standard process. These programs use the UAC's 'external accreditation mapping' form instead of this form. For more information, please contact the UAC/OIRA liaison Reuben Ternes (ternes@oakland.edu). Programs without external accreditation should proceed to option B.

Option B. If you are not accredited by an external body (or your accreditor's standards do not meet the standards set by the Higher Learning Commission), then proceed to Steps 3-5 to create your assessment plan. Members of the UAC are always willing to work with individuals from any department to develop or revise their assessment plans. In addition, the Office of Institutional Research and Assessment (OIRA) has some very helpful tools for faculty and departments listed on their website. If at any time you have any questions, need any assistance, or would like to schedule a meeting with any UAC representatives, please contact the UAC and OIRA liaison, Reuben Ternes (ternes@oakland.edu).

Step 3: Aligning Program Goals, Student Learning Outcomes, and Assessment Measures

Please begin your program assessment plan by completing the table below. Use the "Table" menu in Word to add rows, merge cells, etc. as needed.

- In column 1, record your program goals as they relate your unit's program goals.
- In column 2, record your program's planned student learning outcomes related to each program goal.
  - SLOs should be written using observable and measurable verbs (e.g. write, state, explain, apply, demonstrate, etc.) as opposed to verbs that are difficult to observe directly (e.g. learn, know, etc.).
- In column 3, record the assessment measure(s) that evaluate each student learning outcome (note: each learning outcome should have an associated assessment measure).
- Add rows to the table as necessary.

(1) Program Goals	(2) Student Learning Outcomes	(3) Assessment Measures
Students will demonstrate competence and knowledge in the fundamental areas in Biology	1. Explain phenomena and solve problems related to structures and processes in the three domains of life 2. Relate ecological and evolutionary processes to observed biological diversity 3. Explain inheritance and variation of genetic traits	1. Performance in required course series in biology 2. Performance on professional exams (e.g., MTTC) and/or standardized tests (ETS Major Field Test) compared to national averages, when applicable
Students will demonstrate competence and knowledge in the fundamental areas in Chemistry	1. Solve qualitative and quantitative chemical problems in the areas of inorganic, organic, and analytical chemistry 2. Prepare and interpret experimental or theoretical data in the areas of inorganic, organic, and analytical chemistry	1. Performance on comprehensive American Chemical Society comprehensive exam 2. Performance on professional exams (e.g., MTTC) and/or standardized test (ETS major Field test) compared to national averages, when applicable
Students will demonstrate competence and knowledge in the fundamental areas in Physics	1. Understand forces and interactions in motion and stability 2. Describe relationships between energy and forces 3. Explain waves and their applications for information transfer	1. Performance in required course series in physics 2. Performance on professional exams (e.g., MTTC) and/or standardized tests (ETS Major Field Test) compared to national averages, when applicable

(1) Program Goals	(2) Student Learning Outcomes	(3) Assessment Measures
	4. Describe the atomic and nuclear structure and concepts of modern physics	
Students will demonstrate proficiency in laboratory and technical skills	1. Demonstrate the capacity to operate a variety of technological devices 2. Show proficiency in laboratory skills and their fundamental applications	1. Performance in required laboratory courses (BIO 1202, CHM 1470, CHM 1480, PHY 1100, PHY 1110) 2. Involvement in research
Students will demonstrate sufficient skills to be successful in the interdisciplinary sciences field	1. Explain Earth's geological and biological evolution 2. Understand Earth's origin in relation to the solar system and universe 3. Understand the connections between Earth's systems and human activity	1. Performance in Earth Science courses (ENV 3080, ENV 3090 or PHY 1060, PHY 1040) 2. Alumni survey (see appendix) 3. Involvement in research or class projects focused on critical thinking (see Capstone rubrics)

Step 4: Participation in Assessment Process

Who Will Participate in Carrying Out the Assessment Plan	What Will Be Their Specific Role/s
The Integrated Sciences Committee consisting of the Assessment Representatives of each department (Biology, Chemistry and Physics) and the Integrated Science Assessment Chair	The Assessment Representatives of each department are responsible for collecting and analyzing the data. Subsequently, the Integrated Science Committee meets to - Discuss the results of the analyses, - Discuss possible changes required to the program The Integrated Science Assessment Chair will produce an Assessment Report to be discussed with all full-time faculty at each of the three Departments Meetings. The Integrated Science Assessment Chair will submit a final Assessment Report to UAC and will ensure that any discussed changes to the program are carried out by each department

Step 5: Plan for Analyzing and Using Assessment Results to Improve Program

A. How will you analyze your assessment data?
Individual members of the Integrated Sciences Committee will collect, analyze and report on each measure. The results will be compared to data from previous reports. This comparison will be carried out in 2-year time frames for the first 6 years because of the lack of long-term data. Then, the data will be compared to the previous 5 years.

B. How will you use results to improve your program?
This program is designed for students interested in obtaining a broad scientific knowledge that focuses on the interdisciplinary aspects of each field. We will monitor the success of our students at achieving their career goals and make adjustments based on the input received.
The Assessment Committee will meet periodically to review the results of the assessment measurements and discuss whether program changes are required to achieve program goals.
If it is determined that changes are required, the committee will prepare recommendations that will be presented to and discussed by all the full-time faculty in each of the three departments.
If the entire faculty determines that some or all of the recommendations should be implemented, the Integrated Science Assessment Chair will submit a revised Assessment Plan to UAC. At the same time, the changes will be implemented and monitored. Their impact on the program will be evaluated, and the entire process will be reiterated on an ongoing basis.

Step 6: Submit Assessment Plan
Send completed form electronically to ternes@oakland.edu.

Appendix

Alumni Survey – Integrated Science, BA

Demographic Information

Year of Graduation: **GPA at the Time of Graduation:**

Name:

Address: **City/State/Zip:**

Email: **Phone:**

Please provide information regarding any additional education:

School	Area of Study	Year Attended	Degree

Job history:

Employer	Title	Dates

Please answer the following questions in one or two short sentences:

1. Do you feel that upon completion of your studies you were able to demonstrate base knowledge and have a grasp of the major concepts taught in the program's courses?

2. Do you feel that upon completion of your studies you were able to demonstrate development of critical skills?

3. Do you feel that you have experienced a balance between theoretical and practical knowledge?

4. Do you feel that upon completion of your studies you were prepared for graduate studies/professional work in the sciences?

5. Did you participate in independent research?

6. Consider your first post-bachelor position (job or school). Compared to others in the same position, how well prepared were you? Please describe any areas in which you felt you were under-prepared.

7. Do you have any suggestions for changing or improving the Integrated Science program at Oakland University?

8. Please expand on your current life and interests.

Rubric for Oral Presentation from Biological Sciences Scientific Inquiry and Communication (BIO 4970)

Standard	5-4 Exemplary	3-2 Satisfactory	1-0 Unsatisfactory	Score	Weight	**Total Score**
Organization	Clear set up/opening statement; catch interest Summarizes main points; Very well prepared/practiced	Solid opening statement/outline; Is mostly organized; provides adequate roadmap for audience; prepared	No opening statement/set up; gives audience no focus or context; no outline of talk; unprepared		1.5X	
Content	Demonstrated substance and depth; is comprehensive; shows mastery of material; clear and concise	Covers topic; uses appropriate sources; may lack in clarity is some areas	Does not give adequate coverage of topics, lacks sources		2X	
Critical Analysis	Clearly presents and explains material/concepts; expands on information presented on slides	Some evaluation and expansion; some lack of depth on some material	Unclear explanations, no expansion of material		1X	
Relevance	Clearly relates topic information to HeLa; Demonstrates connections to book	Makes some connections; does not develop some obvious ones	No or few connections to HeLa book and topic		1.5X	
Delivery	Has a natural delivery; modulates voice; is articulate; projects enthusiasm, interest, and confidence; uses body language effectively	Appropriate pace; no distracting mannerisms; easily understood	Hard to understand/follow; voice is too soft or too loud; pace is too fast or slow; one of more distracting mannerism		2X	
Use of Media	Uses slides effortlessly to enhance presentation; excellent format and layout; homeslide; laserpointer	Looks at slides to keep on track; uses appropriate number of slides; adequate homeslide/laser use	Relies heavily on slides/note page or notecards; little eye contact; too many or too few slides; slides with too much text		2X	
Questions	Demonstrates full knowledge of topic; explains and elaborates on all questions	Shows ease in answering; lack of in depth elaboration in answers	Demonstrates little grasp of information; has underdeveloped or unclear answers		E.C.	

Grand total:_____
Comments:
The last row, Questions, pertains to how the presenting student does answering questions during their presentation. E.C. means extra credit. So the rubric is out of a max 50 points, but up to 55 total pts.

Rubric for Term paper from Biological Sciences Scientific Inquiry and Communication (BIO 4970)

Standard	Exemplary (5 – 4 points)
Title – **4 points**	Straight forward with keywords used – 4 points
Abstract – **6 points**	Proper length – 2pts Statement of purpose of study – 2 pts Summary of results – 1 pt Summary of conclusions - 1 pt
Introduction – **20 points**	Importance of study – 4 Question asked – 4 Hypothesis stated - 4 Prediction made – 2 Relevant background -4 Summary of study – 2
Methods & Materials – **Study design** **10 points**	Clear experimental design – 2 pts Specific details given – 3 pts Appropriate methods used to test hypothesis– 5 pts
Results and Data **20 points**	Clear summary of results – 10 pts Effective use of figures, tables, charts to represent data – 5 pts Discussion of treatment effects and relevant findings – 5 pts
Discussion – **20 points**	Clear interpretation of data – 5 pts Effectively relates findings to existing knowledge – 10 pts Offers reasonable critique of study and future directions/new questions – 5 pts
Citations – **10 points**	Properly formatted Literature Cited section – 5 points Properly formatted in-text citations – 5 pts

Grammar/Style - 10 points	One point will be deducted for each grammar, spelling, or punctuation error - Up to 5 points Clear and effective writing style – 2 points Effective overall organization to paper – 3 points

100 points possible

This can be expanded by completing two more columns for “Satisfactory” worth 3-2 points, and then “Unsatisfactory” 1-0 points.

Rubric for Written Paper from Biomedical Sciences Capstone Course (BIO 4972)

	4	3	2	1	0
Evidence and Reasoning	Selects significant and relevant facts, details, quotations or examples. Assesses the strengths and limitations of each source, anticipating the reader's knowledge level and concerns. Uses reputable references.	Selects mostly significant and relevant facts, details, quotations or examples. Assesses the strengths and limitations of each source. Uses reputable references.	Selects somewhat significant and relevant facts, details, quotations or examples. OR sources are not reputable references.	Facts, details, quotations or examples are either insignificant or missing.	No evidence provided.
Critical Analysis & Strength of Argument	Evidence supports claims. Evidence is used to build connections between society, bioethical issue and bioethical principles. Position	Evidence mostly supports claims. Evidence is used to build connections between society, bioethical issue and bioethical principles. Position on	Evidence somewhat supports claims. Evidence is used to build some connections between society, bioethical issue and bioethical principles. Position on bioethical issue is somewhat clear.	Evidence relates to claims loosely. Position on bioethical issue is somewhat clear.	Evidence does not relate to claims.

	on bioethical issue is clear.	bioethical issue is mostly clear.			
Organization and mechanics	Paper is concise, coherent, with a clear flow of ideas. Transitions are used to guide the reader. Demonstrates exemplary command on standard written English. In-text citation are present and in the correct format.	Paper is mostly concise, coherent, with a clear flow of ideas. Transitions are used to guide the reader.Mostly demonstrates exemplary command on standard written English. In-text citation are present and mostly in the correct format.	Paper is somewhat concise, coherent, with some ideas out of place.mSomewhat demonstrates command on standard written English. In-text citation are present but may not be in the correct format.	Paper is somewhat difficult to understand with many ideas out of place.Somewhat demonstrates command on standard written English. Missing in-text citations.	Paper does not follow guidelines and is difficult to understand.Poor command on standard written English.

Rubric for Oral Presentation from Biomedical Sciences Capstone Course (BIO 4972)

		Assessment Criteria & Proficiency				
Elements	Weight	Advanced (4 pts)	Developed (3 pts)	Proficient (2 pts)	Underdeveloped (1 pt)	Absent (0 pt)
Introduction	1	Presenters, paper and authors are introduced; Clear and concise description of the central question being addressed; significance of paper is clear; contains sufficient background needed to understand the paper	Presenters, paper and authors are introduced; Mostly clear and concise description of the central question being addressed; significance of paper is mostly clear; contains most background needed to understand the paper	Presenters, paper and authors are introduced; Somewhat clear and description of the central question being addressed; significance of paper is mostly somewhat clear; contains some background needed to understand the paper	Presenters, paper and authors are introduced; Somewhat unclear description of the central question being addressed; significance of paper is not evident or hard to understand; lacks sufficient background needed to understand the paper	Absent
Methods	0.5	Gives only the needed information to understand the results, does not give unnecessary material; shows overview of experimental flow or approach when appropriate; is aware of the audience's experimental knowledge base	Gives the needed information to understand the results, but may be too detailed; shows overview of experimental flow or approach when appropriate	Gives most of the needed information to understand the results; may outline the experimental approach with some clarity	Gives some of the needed information to understand the results	Absent

Discussion, Conclusion and Further Studies	1	Key findings are discussed and clearly related to the field of study; application of study is evident; Future work is logical and well developed with novel concepts beyond the author's point of view	Key findings are discussed and related to the field of study; Future work is logical and well developed	Key findings are discussed and related to the field of study; Future work is mostly logical and well developed	Key findings are present; Future work is somewhat logical or lacks development	Key findings and/or future work are absent.
Analysis	2	Evaluation of data is in depth, Evaluation of study is clearly articulated, well supported statements of support or shortcoming, Focused analysis on both data and overall study	Evaluation of data is in- depth, Evaluation of study is mostly clearly articulated, statements of support or shortcoming are supported	Evaluation of data is present but could be more substantial, Evaluation of study is mostly clearly articulated, statements of support or shortcoming are mostly supported	Evaluation of data is missing or inaccurate, Evaluation of study is somewhat clearly articulated, statements of support or shortcoming are somewhat supported	Evaluation of data is missing. Evaluation of study is missing.
Organization	2	Holds audience's attention, maintains focus throughout, clear transitions, follows time guidelines, content introduced in a logical sequence, main points are emphasized	Mostly focused on the topics, transitions could be more clear, provides a "road-map for listeners", follows time guidelines, content introduced in a mostly logical	Somewhat focused on the topics, transitions could be more clear, presentation is somewhat too short or long, content introduced in a somewhat logical sequence, main	Somewhat focused on the topics, transitions could be more clear, presentation is largely too short or long, content introduced in a somewhat logical sequence, main points are unclear	Disorganized in places, lacking transitions, presentation is largely too short or long, content illogically placed, main points are unclear or absent

			sequence, main points are given	points are somewhat unclear		
Ability to answer questions	1	Anticipates audience questions; Understands audience questions; Can integrate knowledge to answer questions; Thoroughly and accurately responds to questions	Understands audience questions; Can integrate knowledge to answer questions; Responses may lack details or accuracy	Attempts to answer questions; May not understand audience questions; Responses may lack details or accuracy	Does not attempt to answer questions or answers with vague and inaccurate responses	Does not answer questions

Rubrics for Physics Independent Research Capstone Course (PHY 4995)

Grading Rubric for Paper:

Grade	Organization	Spelling & Grammar	Depth of Discussion	References
A	The paper is written very clearly and well organized	Impeccable grammar, spelling and punctuation	Arguments are pertinent, logical and supported with valid evidence.	The bibliography is complete. The evidence comes from a variety of credible sources.
B	The paper is written fairly clearly and fairly organized	Substantially free of grammar errors, good spelling and punctuation	Arguments are pertinent, fairly logical and reasonably supported.	The bibliography is complete. The evidence comes from many valid sources.
C	The paper is not very clear and/or not well organized	Few grammar errors and/or spelling or punctuation issues	Arguments are mostly pertinent, logical, and supported.	The bibliography is mostly complete. The evidence comes from a few valid sources.
D	The paper is not clear and poorly organized	Multiple grammar errors are present, poor spelling or punctuation	Arguments are not pertinent. Arguments are seldom logical and supported.	The bibliography is missing significant information. The evidence comes from few credible sources.

Grading Rubric for Presentation:

Grade	Organization	Presentation Style	Use of Language	Visual Aids
A	Well-structured talk. Student moves easily between slides and maintains a smooth pace throughout the presentation.	Student is clear and confident. Gives a professional impression.	Student uses a descriptive, scientific language. Concepts are clear and professionally explained.	Visual aids are clear, well organized and enhance the presentation significantly.
B	Generally well-structured talk. Student moves generally well between slides and maintains a smooth pace through most of the presentation.	Clear speech, and quickly overcomes occasional lapses in confidence or hesitation.	Uses mostly descriptive, scientific language, and explanations are mostly professionally and clearly explained.	Visual aids enhance the presentation, but some flaws are present.
C	Fairly structured talk. Student sometimes appears unfamiliar with slide content. Periodically the uneven pace detracts from the presentation.	Somewhat nervous or hesitant style. Still, gets the message across.	Basic language choices, approaching professional explanations, but message is still clear.	Visual aids are adequate but contain several flaws. Can be distracting.
D	Lack of clear structure. Slides seem disorganized and/or speaker is unfamiliar with their content. The uneven pace detracts from the presentation.	Very nervous, hesitant or disjointed style, which interferes with the ability to communicate information to the audience.	Lacks expected scientific vocabulary. Simplistic language leads to unclear statements.	Visual aids are disorganized, detract from the presentation and message.

Rubrics for Physics Seminar Capstone Course (PHY 4970)

Grading Rubric for Papers:

Grade	Organization	Spelling & Grammar	Content	Critique
A	The assignment is written very clearly and well organized	Impeccable grammar, spelling and punctuation	All the requirements of the assignment are met	Excellent and all revisions are made
B	The assignment is written fairly clearly and fairly organized	Substantially free of grammar errors, good spelling and punctuation	Almost all the requirements of the assignment are met	Very Good and almost all revisions are made
C	The assignment is written adequately and reasonably organized	Few grammar errors and/or spelling or punctuation issues	Most of the requirements of the assignment are met	Good and most of the revisions are made
D	The assignment is not clear and poorly organized	Multiple grammar errors are present, poor spelling or punctuation	Few of the requirements of the assignment are met	Poor and few of the revisions are made

Grading Rubric for Participation:

Grade	Participation
A	Excellent level of engagement and participation. Complete initiative in introducing meaningful questions and criticism at the end of the seminar
B	Good level of engagement and participation. Regular contributions to the discussion
C	Limited level of engagement and participation. Limited contributions to the discussion
D	Little or no participation or contribution to the discussion