College of Arts and Sciences
Assessment Inventory (Summer 2014)

John Carroll UNIVERSITY

BIOLOGY (UG and G)	
Learning Goals	(Program Goals): Biology Encompasses the study of all organisms, and our curriculum provides students a solid foundation in: 1. Cellular and molecular biology; 2. Organismal biology; and 3. Evolutionary biology, ecology, and biodiversity. (Learning Goals): Through Course work and mentored student research, the faculty emphasize the importance of evolution in biological phenomena, the role of the environment in biological interactions, and ethical behavior in scientific endeavors. These experiences: 1. Promote strong critical thinking and analytical skills; 2. Provide hands---on experience in biological techniques; and 3. Stimulate creative scientific thought.
Outcome Measures 2004	• MFT; • Placement rates in postgraduate training (medical, nursing, veterinary, dental, graduate); • Senior exit interview; • Poster sessions on student research
Outcome Measures 2012	• MFT; • Placement rates in postgraduate training (medical, nursing, veterinary, dental, graduate); • Senior exit interview; • Poster sessions on student research; • Pre- and post-tests for BL 155-156 *Exit interviews discontinued in 2006 due to high volume of majors (70-80)*
Outcome Measures 2014	• MFT; • Placement rates in postgraduate training (medical, nursing, veterinary, dental, graduate); • Poster sessions on student research;
How does the Department use these measures?	• Once per semester, regular Department meeting used for assessment purposes, to review, discuss, and act upon the data from the previous semester and year. Results: • Changes to the curriculum based on MFAT scores; • New programs developed, based on student interests and direction of the field. • In response to assessment data, 2011 task force established to review the pre-med program. As a result of the task force's work, the position of Pre-Health Advisor was created (first interim, then permanent). The Pre-Health Advisor advises pre-health students, develops resources for all pre-health majors, serves as contact person for all interested incoming students, and helps to expand partnerships with area health institutions. • The Department notices a need for more statistics training for BL students: they are not doing as well on the MFAT as they could if they had a greater degree of proficiency in stats. The dept has not decided how to approach this (more semesters of stats, or modify MT 228, or what).

CHEMISTRY (UG)	
Learning Goals	1. Students will be able to utilize their chemical knowledge to solve problems. 2. Students will be able to effectively communicate scientific information. 3. Students will be able to work competently in the laboratory. 4. Students will demonstrate knowledge in at least four of the five sub-disciplines of chemistry.
Outcome Measures 2004	• Senior exit interview • Alumni survey • Employer survey • American Chemical Society standardized test for Organic and for General Chemistry • MCAT exam
Outcome Measures 2012	• Senior exit interview • American Chemical Society standardized test for Organic and for General Chemistry • MCAT exam *Note: alumni survey dropped; employer survey dropped.* *Note: in 2006-07, CH produced an assessment report*
Outcome Measures 2014	• Senior exit interview • American Chemical Society standardized test for Organic and for General Chemistry • MCAT exam • Very detailed course embedded assessment in CH 261 and CH 441. Objectives for each chapter and final exam designed to address each of those objectives. • Evaluation of student posters and seminar presentations
How does the Department use these measures?	• Changes to individual courses based on course embedded assessment. • Tutoring program enlarged, systematized, and embedded in Learning Commons program.

EXERCISE SCIENCE (UG)	
Learning Goals for Physical Education, Exercise Science, and Sports Studies majors *Note: ES was reorganized as a stand-along program in 2014.*	1. The development of knowledge, skills and dispositions in the science of human movement and behavior through an integrated curriculum across content domains. 2. The development of expertise in the application of knowledge, skills, and dispositions within course, field, and internship experiences relevant to professional values and goals. 3. The development and implementation of communication skills across multiple domains, e.g., written, oral, and physical, that serve a primary role of conveying knowledge through implementation of practice, feedback, therapy, and ongoing support. 4. The development of problem-solving, critical thinking and reflective practices indicative of a knowledge- and evidence-based practice based on a framework of conceptual knowledge. 5. The development of appropriate professional behaviors as demonstrated through knowledge, skills, and dispositions within coursework, internship, and professional opportunities. 6. The development of a values-based, ethical behavior grounded in the liberal arts, observed through personal and professional behaviors, and representative of the Ignatian Ideal of a leader in service to others.
Outcome Measures 2004-2014	• Each course in PE and ES has a Performance-Based Assessment (PBA), a key knowledge, skills, and disposition assessment for the course. The scores for these PBAs are reported for each student at the end of the course. • Physical Education licensure candidates have been assessed using the Praxis II for Content Knowledge. *(Note: a different assessment will begin in 2014-15)*. Physical Education maintains a 100% pass rate on that national licensing exam.

How does the Department use these measures?	• The PBA has two primary uses:
	  ○ Program level: licensure approval for the Physical Education Multi-Age license.
	  ○ Course level: assessment of student knowledge and skills, course evaluation, instructor reflection potential changes in the course, and the examination of the overall curriculum.
	• Each semester, PBA's, assignments and rubrics are evaluated to determine if changes should be made. (They have depended on the NCATE reporting cycle for data.) Usually, some changes are made each year. The PBA data are kept for about 2 years. *Due to the changes in the department over 2013-14, PBA data was not collected for Physical Education and Exercise Science, but it can be collected this summer/fall.*
	
	Examples of changes made to courses in response to assessment data:
	• PE 205/205L: The assignment and rubric needed to be enhanced and clarified as to expectations, clarity of the assignment, and grading within the rubric. The program director met with the instructor; they went through the assignment and revised all the documents, including the rubric. The PBA was very good and quite appropriate but the presentation of the information to the students, e.g., expectations, clarity, grading, needed to be addressed. The primary issue was a faculty member struggling with the development of a rubric. Working together, the instructor and Director corrected this.
	• PE 420: This course deals with individuals with disabilities. Drawing on assessment data, this course was transitioned from a lecture course about disabilities to a lecture/practicum course in which each student is assigned to work with a child with multiple disabilities that are expressed through developmental delay in motor development and motor skills.
	• PE 497 Internship/Seminar: Based upon student feedback and course data, the Internship Handbook was substantially revised.
	• In 2014-15, rubrics will be examined and realigned where necessary to new learning outcomes.

MATHEMATICS & COMPUTER SCIENCE (UG and G)	
Learning Goals	**For mathematics majors (BS):** Students will develop an understanding of: 1. Calculus 2. Modern/linear Algebra 3. Analysis 4. Topology 5. Probability and statistics Students will develop ability in: 6. Problem-solving 7. Applications of mathematics **For mathematics majors (BA for teaching licensure):** Same as above except Geometry instead of Topology and with the addition of History of Mathematics. **For Computer Science majors: Students will:** 1. Understand the basic methodology of computer programming 2. Learn to program in more than one language 3. Learn an object-oriented programming language 4. Gain an understanding of Computer Architecture 5. Develop facility with software engineering concepts **For university core courses:** Course-specific understanding of particular topics/skills in statistics and calculus.
Outcome Measures 2004	• MFT: Every student graduating with a major in MT (BS or BA) or CS must take the MFT in his/her field and show appropriate mastery of the subject. • Senior Exit Interview
Outcome Measures 2012	• MFT: Every student graduating with a major in MT (BS or BA) or CS must take the MFT in his/her field and show appropriate mastery of the subject. • Senior Exit Interview
Outcome Measures 2014	• Senior Exit Interview • MFT: Every student graduating with a major in MT (BS or BA) must take the MFT in his/her field and show appropriate mastery of the subject. *Note: CS will not use MFT as the program has moved away from traditional CS programs.* • We use an in-house comprehensive for the CIS students. *Our Computer Information Systems program no longer uses the MFT, since the MFT exam in CS is made for a very "traditional" program and is a poor fit for our highly web-based CIS degree.*

How does the Department use these measures?	• Faculty have refined the calculus placement algorithm based on the calculus course's goals.
	
	• The Department discusses MFT results yearly, evaluating student performance against the percentiles provided by ETS. In cases of sub-par performance, the student will take the MFT again. If the second attempt does not meet Department standards, the student will do remedial work, followed by an "in-house" exam.
	
	• We've used the MFT results in several ways over the years.
	  ○ First, the overall results give us an external verification of the topics we require of majors, as well as the depth of student learning.
	  ○ Second, the more detailed breakdown of student performance by area has been used to help identify subjects in which our students can use more depth.
	  ▪ For example, tracking our students' performance for several years suggested that we needed a more rigorous course in linear algebra and vector space theory, which we installed during our 2009 overhaul of the BS and BA programs in Mathematics.
	
	• The department has reviewed grade distributions for entry-level courses periodically, followed by meetings of the entire department to discuss content, standards and pedagogy.
	
	• The department meets periodically with faculty members from other departments regarding

	content in our "service" courses, with the discussions centered on whether the students have acquired the tools necessary to succeed in their fields of study. • This ongoing process has led to two redesigns of the "business calculus" course (now MT130); the design, implementation and revision of our Biostats course (MT228); and substantial revisions to our Intermediate Statistics course (MT223), along with smaller adjustments to many other courses. • Development of rubrics for presentations and writing.

PHYSICS (UG)	
Learning Goals	**Physics majors will:** 1. Develop a solid understanding of the core principles of the disciplines of physics 2. Acquire mathematical, analytical, and experimental skills that enable them to measure and interpret data 3. Effectively communicate scientific data and analysis in a variety of ways and venues 4. Appreciate the scientific process, including free exchange of new knowledge and dissemination of important results to the scientific community, and appreciate the impact and role on society both locally and globally. **In addition, engineering physics students will:** learn to apply the core principles and skills to a range of practical/engineering problems. **Physics minors will:** 1. Have a good understanding of the core principles of the discipline of physics. 2. Develop mathematical, modeling, analytical, and experimental skills necessary to solve problems from the core principles. **Other science students will:** 1. Develop a good understanding of the core principles of the discipline of physics and the mathematical and analytical skills that will serve them in their chosen discipline 2. Learn how the principles of physics are applied in other scientific disciplines 3. Be prepared for the physics component of standardized admissions tests to professional schools **Liberal Arts Students will:** 1. Understand the modern scientific view that the natural world is governed by broadly applicable ordering principles that are accessible to human investigation 2. Gain a familiarity with some of these general principles, the nature of scientific evidence, how scientists examine and understand natural phenomena 3. Be exposed to a broad range of current science information that will enable them to connect science to real world situations including health, technology, environmental, and financial issues 4. Learn that scientific investigation is a human endeavor, an intellectual undertaking, and a contribution to a common culture.
Outcome Measures 2004	• Force Concepts Inventory (FCI) as pre- and post-test in the first semester of the introductory physics courses; • Conceptual Survey of Electricity and Magnetism (CSEM) as pre- and post-test in second semester introductory physics courses; • Colorado Upper Division Electrostatics diagnostic test (CUE) as pre- and post-test in PH 365; • Colorado Learning Attitudes about Science Survey (CLASS) as pre- and post-attitudinal survey in the first semester of the introductory physics courses; • Course portfolios; • Capstone senior project and presentation; • Graduate placement rates; • Senior exit interviews
Outcome Measures 2012	• Force Concepts Inventory (FCI) as pre- and post-test in the first semester of the introductory physics courses;

	• Conceptual Survey of Electricity and Magnetism (CSEM) as pre- and post-test in second semester introductory physics courses; • Colorado Upper Division Electrostatics diagnostic test (CUE) as pre- and post-test in PH 365; • Colorado Learning Attitudes about Science Survey (CLASS) as pre- and post-attitudinal survey in the first semester of the introductory physics courses; • Course portfolios; • Capstone senior project and presentation; • Graduate placement rates; • Senior exit interviews • Quantum Mechanics Conceptual Survey (QMCS) as pre- and post-test in PH 445
Outcome Measures 2014	• Force Concepts Inventory (FCI) as pre- and post-test in the first semester of the introductory physics courses; • Conceptual Survey of Electricity and Magnetism (CSEM) as pre- and post-test in second semester introductory physics courses; • Colorado Upper Division Electrostatics diagnostic test (CUE) as pre- and post-test in PH 365; • Colorado Learning Attitudes about Science Survey (CLASS) as pre- and post-attitudinal survey in the first semester of the introductory physics courses; • Course portfolios; • Capstone senior project and presentation; • Graduate placement rates; • Senior exit interviews • Quantum Mechanics Conceptual Survey (QMCS) as pre- and post-test in PH 445 • Course embedded assessment for PH 125L and 126L which are in the process of restructuring

How does the Department use these measures?	• Yearly department meeting devoted to reviewing all assessment materials and data from previous year; at time of bulletin review, program learning goals are reviewed and assessed.
	• Changes to content and pedagogy based on students' performance in standardized pre/post tests
	• Changes to content of the program based on exit interviews.
	• Examples:
	  ○ Introduced new course to prepare students for graduate school and for job application (PH 348, Physics Seminar)
	  ○ Working on a substantial change to algebra-based intro course (PH 135-136)
	  ○ Major changes to capstone course. (PH 407, 408)

PRE-HEALTH PROFESSIONS PROGRAM established 2012-13, in response to the 2011 BL pre-health advising task force **(see BL, above p. 3)**	
Learning Goals	1. Discern and understand the variety of careers in healthcare and pathways to get to those careers 2. Understand program prerequisites, standardized tests, and applications 3. Articulate why the chosen career path is appropriate for oneself 4. Speak knowledgeably and be academically prepared for health professional programs 5. Understand that health careers are service careers
Outcome Measures 2004	n/a
Outcome Measures 2012	n/a
Outcome Measures 2014	• Student attendance for Survey of Health Professions course (track attendance) • Student attendance for invited speakers • Gather standardized test scores • Track student shadowing/volunteer hours in a healthcare setting • Track acceptance rates for students applying to medical, dental, and allied health programs
How does the Department use these measures?	• Alter seminar/speaker schedules • Implement workshops to help students meet goals/objectives • Talk with department chairs and interact with departments if student academic weaknesses are identified • Make adjustments to the minor to make it more accessible and comprehensive for students

PSYCHOLOGICAL SCIENCE (UG)	
Learning Goals	1. Fundamental knowledge base in the core areas of psychology 2. Critical thinking skills and their application 3. Proficiency in the use of the language of psychology 4. Expertise in the methods of information gathering, organization, and synthesis as applied to psychology 5. Mastery of the experimental method and statistical analysis as practiced by psychologists 6. An understanding of the ethics and values of the discipline of psychology 7. Readiness for graduate study or for transition into the workforce 8. Recognition of how psychology contributes to the understanding of human diversity
Outcome Measures 2004	• PS 101 Pre- and post-test; • MFT; • Portfolio in PS 301/301L; • Senior exit survey; • Supervisor and student evaluations of fieldwork experiences
Outcome Measures 2012	• PS 101 Pre- and post-test; • MFT; • Portfolio in PS 301/301L; • Senior exit survey; • Supervisor and student evaluations of fieldwork experiences
Outcome Measures 2014	• PS 101 Pre- and post-test; • MFT; • Portfolio in PS 301/301L; • Senior exit survey; • Supervisor and student evaluations of fieldwork experiences; • Tracking the correlation between performance in PS 101 and MFAT scores.
How does the Department use these measures?	Use of MFT – students must score above the national mean for successful pass to show they are proficient in understanding the discipline of psychology as undergraduates. In response to learning assessment data and the 2007 program review, the following tracks have been added: • Child and Family Studies • Forensic Psychology • Eating Disorders • Psychology and Sports Sciences And the following courses have been added: • PS 297 – Introduction to Cognitive Science • PS 362 – Health Psychology • PS 370 – Forensic Psychology • PS 381 – Eating Disorders • PS 407 – Psychology of Autism • PS 415 -- Multicultural Psychology

The chart above is adapted from brief charts on CAS assessment measures provided by Anne Kugler and CAS learning goals provided by Kathleen Dean. The content in substance was provided by CAS Departments and Programs to Maryclaire Moroney, Graciela Lacueva, and Pam Mason.

Pam Mason 14 July 2013