

Washtenaw Community College Comprehensive Report

BIO 225 Tests and Measurements in Exercise Science Effective Term: Winter 2025

Course Cover

College: Math, Science and Engineering Tech

Division: Math, Science and Engineering Tech

Department: Life Sciences

Discipline: Biology

Course Number: 225

Org Number: 12100

Full Course Title: Tests and Measurements in Exercise Science

Transcript Title: Tests & Measure in Exer Scienc

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Time Schedule , Web Page

Reason for Submission:

Change Information:

Consultation with all departments affected by this course is required.

Rationale: We need to change "MTH 160" to "MTH 160 OR MTH 160X" as a prerequisite.

Proposed Start Semester: Spring/Summer 2016

Course Description: In this course, students will integrate and apply the principles learned in the prerequisite courses. Students will learn to evaluate the strengths and weaknesses of scientific research in the field of exercise science, gain practical experience and expertise with widely used measuring instruments of physical performance and body composition and may choose to take the external certification examinations for personal trainer and health/fitness instructor.

Course Credit Hours

Variable hours: No

Credits: 3

Lecture Hours: Instructor: 30 **Student:** 30

Lab: Instructor: 45 **Student:** 45

Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 75 **Student:** 75

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Requisites

Prerequisite

BIO 110 minimum grade "C"

and

Prerequisite

BIO 111 minimum grade "C"; may enroll concurrently
and

Prerequisite

BIO 201 minimum grade "C"
and

Prerequisite

MTH 160 minimum grade "C"; may enroll concurrently
or

Prerequisite

MTH 160X minimum grade "C"; may enroll concurrently

General Education**MACRAO**

MACRAO Science & Math

MACRAO Lab Science Course

General Education Area 4 - Natural Science

Assoc in Applied Sci - Area 4

Assoc in Science - Area 4

Assoc in Arts - Area 4

Michigan Transfer Agreement - MTA

MTA Lab Science

Request Course Transfer**Proposed For:****Student Learning Outcomes**

1. Conduct appropriate statistical tests of exercise performance and biometric data and interpret the data.

Assessment 1

Assessment Tool: Outcome-related final paper

Assessment Date: Winter 2026

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Departmentally developed rubric

Standard of success to be used for this assessment: 70% of the students will score 75% or higher.

Who will score and analyze the data: Departmental faculty

2. Conduct tests to ascertain maximal oxygen uptake and body composition of human subjects.

Assessment 1

Assessment Tool: Outcome-related laboratory demonstration

Assessment Date: Winter 2026

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklists

Standard of success to be used for this assessment: 70% of the students will score 100%.

Who will score and analyze the data: Departmental faculty

3. Demonstrate competence in the knowledge, skills, and abilities required for the Certified Personal Trainer as listed in the current edition of the American College of Sports Medicine (ACSM) Guidelines for Exercise Testing and Prescription.

Assessment 1

Assessment Tool: ACSM Personal Training Prep Exam questions

Assessment Date: Winter 2026

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 75% or higher.

Who will score and analyze the data: Departmental faculty

Course Objectives

1. Conduct the appropriate statistical test of exercise performance and biometric data.
2. Interpret the meaning of statistical tests of exercise performance and biometric data.
3. Evaluate strengths and weaknesses of published exercise science data in terms of study design, statistical power, and limitations of the conclusions.
4. Conduct sub-maximal exercise tests.
5. Predict maximal oxygen uptake from sub-maximal exercise test data.
6. Conduct a maximal oxygen uptake test using a metabolic cart, treadmill and bike ergometer.
7. Differentiate a valid from an invalid test.
8. Explain why a test is valid or invalid using data from the test to support the conclusion.
9. Estimate the accuracy of an invalid or inconclusive test and explain the reasons for the estimate.
10. Conduct several body composition tests correctly.
11. Compare the results of several body composition tests and explain the strengths and weaknesses of each test.
12. Provide a confidence interval for the body composition based on the reliability and validity of each test.
13. Identify risk factors found in health status measurements and fitness appraisals.
14. Incorporate suitable and innovative activities into an exercise prescription that will improve an individual's functional capacity.
15. Educate and/or communicate effectively with individuals and groups regarding lifestyle modifications.

New Resources for Course**Course Textbooks/Resources**

Textbooks

ACSM Committee. *ACSM's Guidelines for Exercise Testing and Prescription*, 9th (or latest) ed. Baltimore: Wolters Kluwer/LWW, 2014, ISBN: 1-60913-955-0.

Manuals

Periodicals

Software

Equipment/Facilities

Level I classroom

Testing Center

Other: Exercise Science Laboratory (LA235)

Reviewer**Action****Date****Faculty Preparer:**

Susan Dentel

Faculty Preparer

Sep 25, 2024

Department Chair/Area Director:

Susan Dentel

Recommend Approval

Oct 01, 2024

Dean:

Tracy Schwab

Recommend Approval

Oct 01, 2024

Curriculum Committee Chair:

Randy Van Wagnen

Recommend Approval

Oct 18, 2024

Assessment Committee Chair:

Jessica Hale

Recommend Approval

Oct 18, 2024

Vice President for Instruction:

Brandon Tucker

Approve

Oct 19, 2024

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Department: Life Sciences

Discipline: Biology

Course Number: 225

Org Number: 12100

Full Course Title: Tests and Measurements in Exercise Science

Transcript Title: Tests & Measure in Exer Scienc

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Time Schedule , Web Page

Reason for Submission: Three Year Review / Assessment Report

Change Information:

Consultation with all departments affected by this course is required.

Course description

Pre-requisite, co-requisite, or enrollment restrictions

Outcomes/Assessment

Objectives/Evaluation

Rationale: Three-year syllabus review (overdue)

Proposed Start Semester: Winter 2016

Course Description: In this course, students will integrate and apply the principles learned in the prerequisite courses. Students will learn to evaluate the strengths and weaknesses of scientific research in the field of exercise science, gain practical experience and expertise with widely used measuring instruments of physical performance and body composition, and be prepared for external certification examinations for personal trainer and health/fitness instructor.

Course Credit Hours

Variable hours: No

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MACRAO Science & Math

MACRAO Lab Science Course

General Education Area 4 - Natural Science

Assoc in Applied Sci - Area 4

Assoc in Science - Area 4

Assoc in Arts - Area 4

Michigan Transfer Agreement - MTA

MTA Lab Science

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Data analysis and interpretation: Conduct appropriate statistical tests of exercise performance and biometric data and interpret the data. Evaluate scientific literature.

Assessment 1

Assessment Tool: Final Project (Assessment Rubric attached) The final project is an original research paper.

Assessment Date: Winter 2018

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Final Project Assessment Rubric (attached)
The final project is an original research paper.

Standard of success to be used for this assessment: At least 70% of the students will score at least 75% on the final project (Original Research Paper).

Who will score and analyze the data: Life Science Faculty

2. Physiological Tests: Conduct tests to ascertain maximal oxygen uptake and body composition of human subjects.

Assessment 1

Assessment Tool: Performance in Laboratory (Mastery Checklists attached)

Assessment Date: Winter 2018

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Mastery checklists for aerobic capacity and body composition

Standard of success to be used for this assessment: At least 70% of students will score 100% (complete mastery) on the mastery checklists for aerobic capacity and body composition.

Who will score and analyze the data: Life Science Faculty

3. Personal Training Skills: Demonstrate competence in the knowledge, skills, and abilities

required for the Certified Personal Trainer as listed in the current edition of ACSM's Guidelines for Exercise Testing and Prescription.

Assessment 1

Assessment Tool: External: ACSM Certification Exam for either Personal Trainer or Health/Fitness Instructor Internal: Performance on final exam that includes ACSM-derived questions.

Assessment Date: Winter 2018

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Students will self-report outcome of ACSM Exam. Final exam will include questions from a pool of questions derived from the ACSM's Certification Review.

Standard of success to be used for this assessment: External: At least 70% of students who take the ACSM certification exam will become certified in 2 or fewer attempts. Internal: At least 70% of students will score at least 75% on the final exam containing ACSM-derived questions.

Who will score and analyze the data: Life Sciences Faculty

Course Objectives

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11. Compare the results of several body composition tests and explain the strengths and weaknesses of each test.
12. Provide a confidence interval for the body composition based on the reliability and validity of each test.
13. Demonstrate knowledge and skill in risk factor and health status identification and fitness appraisal.
14. Demonstrate the ability to incorporate suitable and innovative activities into an exercise prescription that will improve an individual's functional capacity.
15. Demonstrate the ability to effectively educate and/or communicate with individuals and groups regarding lifestyle modifications.

New Resources for Course

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<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Marvin Boluyt</i>	<i>Faculty Preparer</i>	<i>May 13, 2015</i>
Department Chair/Area Director: <i>Anne Heise</i>	<i>Recommend Approval</i>	<i>May 13, 2015</i>
Dean: <i>Kristin Good</i>	<i>Recommend Approval</i>	<i>May 14, 2015</i>
Curriculum Committee Chair: <i>Kelley Gottschang</i>	<i>Recommend Approval</i>	<i>Jun 24, 2015</i>
Assessment Committee Chair: <i>Michelle Garey</i>	<i>Recommend Approval</i>	<i>Jul 07, 2015</i>
Vice President for Instruction: <i>Bill Abernethy</i>	<i>Approve</i>	<i>Jul 09, 2015</i>