

ASSESSMENT PLAN FOR THE M.S. IN EXERCISE SCIENCE

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Program Description

The Division of Exercise Science, Sport, and Recreation offers the Master of Science in Exercise Science to prepare students for allied health and medical careers in the hospital and medical center, commercial, community, corporate wellness, cardiopulmonary rehabilitation, diabetes management, performance assessment and enhancement settings, and related research positions. Preparation for such careers includes an emphasis on leadership roles and skills that permit one to work with individuals on a client/patient/subject continuum extending from the elite athlete to those with chronic disorder/disease to the cardiac transplantation recipient as well as the in between – the recreational athlete and those simply wishing to stay healthy by living sensibly.

The course of study is a two-year program with a 39-hour requirement. Admission to the program requires a 2.75 GPA, an appropriate undergraduate/graduate background, completion of the GRE, a personal interview, three letters of reference, and admission to the Graduate College. The **Clinical Applied Area of Emphasis** requires completion of a clinical internship. The **Exercise Physiology Area of Emphasis** requires completion of a thesis or an exercise science internship.

I. PROGRAM GOALS:

1. Student Academic Achievement

- 1.1 The student will demonstrate knowledge of subject matter in the field, including traditional sources of information and current literature.
- 1.2 The student will demonstrate knowledge of statistics, research design, and the ability to interpret current research articles.
- 1.3 The student will successfully apply carefully structured strategies learned in class to real-world problem-solving situations.
- 1.4 The student will demonstrate skillful use of current laboratory and related technical equipment as well as the related procedures and techniques.
- 1.5 The student will demonstrate respect for the client/participant/athlete/patient entrusted to his/her care [i.e., “the clinical attitude”].
- 1.6 The student will demonstrate respect for scientific and clinical assessment procedures and carefully taken data.
- 1.7 The student will develop careful, thoughtful, thorough, and responsible attitudes and work habits in the clinical and related allied health care settings.

2. Faculty Development

- 2.1 Classes will be taught by full-time, tenure track faculty with or actively pursuing a terminal degree.
- 2.2 Tenure track faculty will participate in scholarly activity.
- 2.3 Tenure track faculty will attend professional conferences and workshops, assisting them in their efforts to remain informed in their field.

3. Curriculum Development

- 3.1 The curriculum will be consistent with current opinion in the field as established by professional societies.
- 3.2 The curriculum will reflect new theoretical and technical developments in the field. This includes an emphasis on the related scientific literature.
- 3.3 This unique curriculum will continue to prepare students for a broad spectrum of careers in health promotion, disease prevention, rehabilitation, sports medicine, sports science, and the pharmaceutical industry.
- 3.4 Content and materials to prepare students for other allied health careers will continue to be incorporated in the curriculum when opportunities are presented.

II. LEARNING OUTCOMES:

1. Program Learning Outcomes:

- 1.1 Students entering the program will have a minimum 2.75 GPA, an undergraduate course in exercise physiology, kinesiology, fitness assessment, chemistry, and some relevant experience. Applicants with less than an acceptable GPA may substitute an acceptable GRE score. A student's undergraduate major should be compatible with their graduate area of emphasis.
- 1.2 The student will be skillful in the research application of basic statistical analyses.
- 1.3 Students must be capable of describing basic research design. This includes *TheScientific Method* as well as analytic research, descriptive research, experimental research, and qualitative research methods.
- 1.4 The student will be familiar with and confident in discussions of contemporary related literature and current scientific opinion.
- 1.5 Students must be informed and able to identify and implement current clinical practice guidelines in their area of emphasis. This would include the following:
 - 1. Screening, stratification, and risk stratification of clients/patients/subjects.
 - 2. Policies and procedures for sports medicine, sports science performance assessment and enhancement, ambulatory Phase I, Phase II, and Phase III-Long-term care cardiac patients.
 - 3. Management procedures for coronary artery bypass graft surgery [CABGS], percutaneous transluminal coronary angioplasty [PTCA], and cardiac transplantation patients. Include the application of cardiac imaging at rest and with exercise stress here.
 - 4. Perform multi-stage exercise testing [MSET] skillfully as well as understand and apply contraindications to exercise stress testing and exercise.

5. Prepping patients /participants/clients, including athletes for exercise testing, exercise therapy, and training.
 6. Develop and teach exercise prescription for all modalities, manage patients/clients with chronic disorder through a program and develop progress reports.
 7. Interpret lipid profiles and relate to client outcomes.
 8. Develop skill in measuring blood pressure and teaching heart rate assessment.
 9. Relate risk factor identification and management to risk reduction and outcomes.
 10. Assist physicians with physical examinations.
 11. Develop EKG reading and interpretation skills.
 12. Understand the clinical procedures for determining the occurrence of a myocardial infarction [MI].
 13. Understand and interpret medical profiles and analyze case study findings.
 14. Develop business skills and acumen.
 15. Develop skills and background in Advanced Cardiac Life Support [ACLS].
 16. Develop an appreciation for “Doctor’s Orders” and standing orders relative to the occurrence of an MI, ACLS, exercise prescription, and related clinical procedures.
 17. Develop skills with metabolic assessment of human performance and physical work capacity [PWC] as well as related clinical variables.
 18. Develop skills with human performance assessment and performance enhancement.
 19. Develop a *clinical attitude* – respect for the client/patient.
 20. Develop a *scientific attitude* – respect for clinical assessment procedures and carefully taken data.
 21. A final, all-encompassing, objective is the development of careful, thoughtful, thorough, and responsible attitudes and work habits in the clinical and allied health settings.
- 1.6 The student will demonstrate computer skills relative to their area of emphasis. Minimal competency must be achieved in use of the word processor, email, Excel spreadsheets, PowerPoint presentations and applications, and use of the Internet.

2. Faculty Development Outcomes:

- 2.1 Tenure track faculty with or actively working on terminal degrees will teach 100% of courses in the program.
- 2.2 Professionals from clinical settings in the region and program graduates are an important resource as guest speakers.
- 2.3 Tenure track faculty will maintain current knowledge in their areas of expertise by actively participating in scholarly activity and attending meetings of scholarly societies.

3. Curriculum Outcomes:

3.1 The MS Exercise Science program will conduct a continuous review of the curriculum based on the perception of students in the program and of its graduates. This information will be obtained through the use of:

- ✓ Student evaluations for each course
- ✓ Student evaluations of the program following each oral examination
- ✓ Surveys sent to program graduates
- ✓ Surveys sent to employers of program graduates
- ✓ Surveys sent to internship site supervisors

3.2 The curriculum will be reviewed on an annual basis to consider changes in current opinion .

3.3 The curricula will be reviewed to determine the consistency of the program with standards of professional societies and accrediting agencies. Some of these professional groups are the American College of Sports Medicine, the American Association of Cardiovascular and Pulmonary Rehabilitation, and the American Diabetes Association.

4. Course Outcomes:

- 4.1 Student evaluations for each course.
- 4.2 Individual student conferences.
- 4.3 Class discussions of course objectives.
- 4.4 Oral examinations with carefully structured objectives.

III. IDENTIFY MEASUREMENT INSTRUMENTS:

1. Programmatic Instruments:

See the attached PROGRAM ASSESSMENT WORKSHEET.

2. Course Related Instruments:

See the current copies of each course syllabus.

IV. THE REVIEW PROCESS:

The review process is ongoing and findings with merit are implemented in the next course offering. Relevance to current opinion in the field and to accrediting agency requirements is considered on a regular basis. Examples are requirements for successful completion of American College of Sports Medicine certification for Certified Exercise Specialist and Certified Clinical Program Director. Other considerations are the professional certification of our Cardiac Rehabilitation Program by the American Association of Cardiovascular and Pulmonary Rehabilitation and the professional certification of our Diabetes

Program by the American Diabetes Association. Recent publication of revised “Lipid Management Guidelines” by the Adult Treatment Panel III in the *Journal of the American Medical Association* required implementation in many courses. Students are expected to use these guidelines in screening and case management. Student satisfaction and motivations are also important considerations. Successful strategies are strengthened and maintained and ineffective strategies are dropped.

V. DATA COLLECTION:

Data will be collected over a two-year period for students admitted to the program after September 1, 2001, and through applications made until August 31, 2003. This will provide information for two academic years [2001-2003]. Graduate satisfaction surveys from both the graduate school and the Division of ESSR will be included in this analysis. Employer satisfaction surveys will be completed immediately upon return of the graduate questionnaires.

VI. DATA ANALYSIS:

The data analysis will be ongoing. Descriptive statistics will be obtained to present our findings. The most recent data analysis was a five-year study completed for the **Program Review**.

VII. ACTION TAKEN:

The recent five-year study completed for the **Program Review** provided a great deal of useful information. Graduate and employer suggestions for Program Modifications/Improvements and the subsequent actions taken are listed in the Table below.

**Graduates and Employer Suggestions
For Program Modifications/Improvements
With Dr. Marley's Responses**

Consider more emphasis on pulmonary rehabilitation strategies and management.

- ✓ Response: this has been implemented into PE 683 and PE 601

Go a little deeper into exercise physiology and biochemistry.

- ✓ Response: This request is being incorporated into individual student and student -team projects and includes computer applications.

Add more work on writing exercise prescriptions and modality skills instruction.

- ✓ Response: This is always a work in progress and is being addressed with class workshop assignments and case study assignments.

Add a sports injury management class.

- ✓ Response: Classes are available but students may not be able to work them into their academic schedules without exceeding their degree credit hour requirement.

Require more hands-on work for those who are not graduate assistants and/or not in the region, or close to campus. We need to assist more with exercise testing and related clinical opportunities in the laboratory.

- ✓ Response: A staff member has been assigned the responsibility of scheduling laboratory experiences for graduate students motivated to take advantage of these opportunities to learn exercise testing, metabolic analysis, anthropometric measurement skills, and related technical skills. Blood pressure measurements, EKG interpretation, blood glucose measurement training opportunities are always available for scheduling under supervision in the Diabetes Exercise Center and Cardiac Rehabilitation Program.

Place even more emphasis on clinical patient outcomes.

- ✓ Response: This concern has been implemented into our classes. Additionally, we have implemented the Orion System Benchmark Outcome System into our Cardiac Rehabilitation Program and students can observe this in action. This includes an emphasis on defining and equating procedures and events

Program Assessment Worksheet
Measuring Instruments

Department: Exercise Science, Sport, and Recreation [ESSR]

Degree: AAS: _____; Certificate: _____; BA: _____; BS: _____; MA: _____; MS: √ _____;

Program: MS – Exercise Science CIP CODE: _____

Date Completed: _____

*Code: F=Formative Assessments; S=Summative Assessments; VA=Value Added Assessments

Assessment Measures: Local Major Codes in Program:

	EXERCISE SCIENCE		
***Internal Measures			
1. Written Examinations	S		
2. Quizzes	S		
3. Faculty Evaluations	F		
4. Oral Presentations	S		
5. Oral Examinations	S		
6. Discussion Groups	S		
7. Focus Groups	S		
8. Pre/Post Tests	S		

9. Student Satisfaction Surveys	F		
10. Case studies	S		
11. Standardized Tests	S/F		
12. Observation	F		
13. Internet laboratory assignments	S/F		
14. Library reserve assignments	S		
15. Comprehensive Examinations	S		
16. Clinical writing assignments	S		
17. Workshops	S		
18. Thesis	S		
19. Internship	S		
20. Abstract preparation	S		
21. Annotated reports	S		
22. Laboratory assignments	S		
23. Term papers	S		
24. Professional meetings	F		
25.			
**External Measures:			
1. Graduate Surveys	F		
2. Interviews	F		

3. Employer Surveys	F		
4. Professional Group Recommendations	F		
5. Accrediting Organization	F		
6. Focus Groups	F		
***Value Added			
Work experience:			
1. Graduate Assistant	F		
2. Internship	S		
3. Independent Study	S		
4. Volunteer in clinic	F		

VIII. ASSESSMENT OF STUDENT OUTCOMES [CHART I]

Chart I below provides a detailed summary of student outcomes and subsequent **Action Taken**. An examination of **7. Technical Skills** demonstrates one application of our outcome assessment procedure. *Verification procedures* [**Assessment Tool**] for teaching students the procedure for blood pressure [BP] measurement utilize a teaching stethoscope that permits faculty to monitor the accuracy of student BP measures. A *Verification record* [**Standards/Benchmarks**] is maintained until an appropriate *Clinical skill level is achieved* [**Results/Analysis**]. When a student is considered qualified to monitor BP, they are given a *Clinical assignment* [**Action Taken**] as a staff member.

Chart I Assessment Summary
Marshall University
Assessment of Student Outcomes: Component/Course/Program Level
Component Area/Program/Discipline: Exercise Science

Component / Course / Program Level					
Student Outcome	Person or Office Responsible	Assessment Tool or Approach	Standards/Benchmark	Results/Analysis	Action Taken
1. Admission Competencies	Program Director	UG – GPA Science background Consider GRE scores; interview; letters of rec.	3.00 GPA Full Admission UG Exercise Physiology UG Fitness Assessment UG Kinesiology	Annual and 5-year program growth and percent of graduates working <u>In Field</u> or <u>Allied Field</u> .	Establish more rigid entrance criteria and increase rigor of Exercise Science curriculum
2. Statistical Analysis	Program Director, course instructors, oral exam committee	PE 670; EDF 517, 621, 625; PSY 623, 624; MGT 500, MKT 683	Successful completion of course work. Pass oral examination.	Course application; student performance on oral examinations.	Show students relevance in daily practice and patient outcome data management
3. Research Design	Program Director, course instructors, oral exam committee	PE 670; EDF 517, 621, 625; PSY 623, 624; MGT 500, MKT 683	Successful completion of course work. Pass oral examination.	Number of student passing courses. Student performance on orals.	Program management:: minimize variance and maintain quality control
4. Related Literature	Program Director; advisors, course instructors, oral exam committee.	PE 621, 670, 682, 683, 684, 685; student literature reviews; comprehensive oral examination.	Successful completion of course work, internship, thesis, and comprehensive oral examination.	Number of student passing courses. Student performance on oral examinations	Implement current medical opinion: ATP III, JNC VII; ADA Clinical Practice Guidelines & benchmarking
5. Clinical Skills	Program Director; advisors, course instructors, oral exam committee.	PE 601, 621, 683, 684, 687, COUN 577, 535, 540, internship, thesis; oral examination	Successful completion of course work, internship [site], or thesis. Pass comprehensive oral examination.	Performance in classes, internship & related tasks, quality of thesis, and oral examination.	Medical Profile Test Development & Case Management training; Cases assigned.
6. Best Practices	Program Director advisors, course instructors, oral exam committee.	All course work, internship, thesis, and oral exam; EKG and ACLS Courses at the Medical Center.	Successful completion of course work, internship [site], thesis, & pass comprehensive oral examination.	Performance criteria standards achieved in classes, internship, thesis, & oral examination.	Application of screening, stratification, risk stratification in DEC, CRP, CPMP, internship. thesis .
7. Technical Skills	Program Director; advisors, course instructors, oral exam committee.	PE 601, 621, 683, 684, 687 internship, oral exam; EKG/ ACLS Courses Medical Ctr. Verification procedures.	Successful completion of course work and internship. Pass oral examination. Verification record.	Performance in classes, internships, and oral examinations. Clinical skill achieved.	EKG, BP, blood glucose, MSET, ACLS, patient management skills: clinical assignment.
8. Graduate satisfaction	Program Director	Survey questionnaire; personal interview; network	Graduate satisfaction ratings from questionnaires/interviews.	Questionnaire and interview data	Revise program content, website, & guest speakers
9. Employer satisfaction	Program Director	Survey questionnaire; personal interview; network	Employer satisfaction ratings from questionnaire/interviews.	Questionnaire data and interview data	Revise program content;, website, & guest speakers.