

**College of Micronesia-FSM**  
**PO Box 159**  
**Pohnpei, FM 96941**

**COURSE OUTLINE**

Physical Fitness: Walking for Health and Fitness  
 Course Title

ESS101w Exercise Sport Science  
 Department & Number

**Course Description:**

This is a semester-long course designed to improve health, cardiovascular endurance and flexibility through walking, and to give students an appreciation of the role regular physical activity plays in the quality of life. Students will learn basic cardiovascular system anatomy and physiology, as well as flexibility exercises for major muscle groups. Physical fitness levels will be measured at the beginning and end of the course, allowing students to notice the improvements regular exercise produces. Course topics also includes injury prevention specific to fitness walking.

**Course Prepared by:** Rachel Hollingsworth

**State** Pohnpei/National Campus

	Hours per week		No. of week	Total Hours	=	Semester Credits	
<b>Lecture</b>	_____	<b>x</b>	_____	<b>x</b>	=	_____	
<b>Laboratory</b>	<u>  3  </u>	<b>x</b>	<u> 16 </u>	=	<u> 48 </u>	=	<u>  1  </u>
<b>Workshop</b>	_____	<b>x</b>	_____	<b>x</b>	=	_____	

**Purpose of Course:**

Degree Requirement	_____
Degree Elective	<u>  x  </u>
Certificate	_____
Other	<u>  x  </u>

**Prerequisite Courses:** None.

\_\_\_\_\_  
 Signature, Chairperson, Curriculum Committee

\_\_\_\_\_  
 Date Approved by Committee

\_\_\_\_\_  
 Signature, President, COM-FSM

\_\_\_\_\_  
 Date Approved by President

## **I. Course Objectives**

### **A. General/Program Outcomes**

1. Explain physical fitness and wellness, as well as their importance to overall health, disease prevention, and athletic performance.
2. Demonstrate the physical skills necessary to perform a variety of physical activities.
3. Design and demonstrate exercise regimes appropriate to improve health, physical fitness, and athletic performance.
4. Compare and contrast the education and skills needed to gain employment in wellness, physical education (K-12), kinesiology and coaching.
5. Describe and demonstrate beginning coaching skills.
6. Value regular physical activity and its contribution to a healthful lifestyle.

### **B. Student Learning Outcomes**

Upon successful completion of this course, the student will be able to:

1. [Core] List and explain the five factors of physical fitness.
2. [Core] Identify the major components of the cardiovascular system.
3. [Core] Identify the location of the major muscle groups on their own bodies.
4. [Core] Explain the importance of warm-up, formal activity, warm down and stretching.
5. [Core] Calculate and find their aerobic heart rate training zone.
6. [Core] Walk at a moderate pace for 35-45 minutes.
7. [Core] Explain the components of the acronym FITT: Frequency, Intensity, Time and Type.
8. [Core] Perform flexibility exercises for each of the major muscle groups.
9. [Core] Given their pre- and post-semester measurements on resting heart rate, blood pressure, cardiovascular endurance (via Rockport One-mile walk test), erector spinae/hamstrings flexibility (via a sit and reach test), and percent body fat, accurately describe the changes in their fitness from the beginning of the course to the end of the course.
10. [Core] Identify the symptoms of common walking injuries (e.g. sprains, strains, heat exhaustion, blisters, corns & stress fractures), preventative measures, and basic treatment in a written format.
11. [Core] Identify diseases and illnesses inversely related to physical activity level.
12. [Core] Express how regular physical activity makes them feel (in a written, oral, or visual format).
13. [Peripheral] Describe the difference between aerobic and anaerobic activities.
14. [Peripheral] Define the term “anaerobic threshold”.
15. [Peripheral] Describe interval training.

## **II. Course Content**

### **A. Introduction to Exercise Science/Fitness**

- i. Five Factors of Physical Fitness
  1. Cardiovascular
  2. Muscular Strength
  3. Muscular Endurance
  4. Flexibility
  5. Body Composition
- ii. Pretests
  1. Heart rate/blood pressure
  2. Rockport walk test (see appendix C)
  3. Sit and reach test

- a. (Sit and reach, curl-up and push-up instructions and norms  
<http://darkwing.uoregon.edu/~eatr/student/ft/fmf.html>)
    - 4. Percent body fat
      - a. (Body composition norms  
<http://darkwing.uoregon.edu/~eatr/student/ft/ftbc.html>)
    - iii. Delayed Onset Muscular Soreness
- B. Cardiovascular Logs
  - i. Anatomy of cardiovascular system
  - ii. Aerobic exercise
  - iii. Calculating Target Heart Rate Zones
    - 1.  $208 - \text{age} = \text{max heart rate reserve}$
    - 2.  $\text{Max heart rate reserve} \times \text{desired intensity (60-80\%)} = \text{target heart rate}$
  - iv. Very slow walk pace (22+ min mile)
- C. Walking form
  - i. Anatomy of cardiovascular system
  - ii. Posture
  - iii. Opposition leg/arm movement
  - iv. Heel-toe pattern
  - v. Breathing
  - vi. Review previous concepts
- D. Improving cardiovascular fitness
  - i. FITT principle
  - ii. Importance of warm-up/cool-down
  - iii. Interval training
  - iv. Review previous concepts
- E. Improving Flexibility
  - i. Importance and timing of stretching
  - ii. Anatomy of the lower body
    - 1. Quadriceps
    - 2. Hamstrings
    - 3. Gluteus maximus
    - 4. Gastrocnemius
    - 5. Anterior Tibialis
    - 6. Hip adductors and abductors
  - iii. Interval training
  - iv. Review previous concepts
- F. Benefits of Regular Physical Activity/Injury prevention
  - i. Mortality risk/longevity
  - ii. Slow – Moderate walk pace (18 – 20 min/mile)
  - iii. Anatomy of abdominals/low back/buttocks
  - iv. Core exercises
- G. Injury Prevention
  - i. Blisters, corns and stress fractures
  - ii. Flexibility benefits
  - iii. Cross training
  - iv. Overtraining symptoms
  - v. Review previous concepts
- H. Injury Prevention
  - i. Exercising in the heat & humidity
  - ii. Hydration/fluid intake
  - iii. Heat stroke
  - iv. Review previous concepts

- I. Pace & Distance
  - i. Anaerobic threshold
  - ii. Interval training
  - iii. Review previous concepts
- J. Benefits of Cardiovascular Fitness
  - i. Mortality risk/longevity
  - ii. Type II diabetes
  - iii. Cancer
  - iv. Review previous concepts
- K. Benefits of Cardiovascular Fitness
  - i. Cardiovascular disease
  - ii. Fast walk pace (16 min/mile)
  - iii. Review previous concepts
- L. Benefits of Cardiovascular Fitness
  - i. Mental Health
  - ii. Anatomy of the upper body
    - 1. Pectoralis major
    - 2. Latissimus dorsi
    - 3. Trapezius
    - 4. Deltoids
    - 5. Biceps
    - 6. Triceps
  - iii. Review previous concepts
- M. Benefits of Cardiovascular Fitness
  - i. Obesity
  - ii. BMI and risk levels
  - iii. Percent body fat and risk levels
  - iv. Review previous concepts
- N. Health & Wellness
  - i. Not just an “absence of disease”
  - ii. Wellness concepts of body/mind/spirit
  - iii. Walking meditation
  - iv. Review previous concepts
- O. Nutrition
  - i. Nutrients
  - ii. Harvard Medical School food pyramid (see attachment 1)
  - iii. Okinawan Food Pyramid (see attachment 2)
  - iv. Review previous concepts
- P. Training effect, overload
  - i. Definitions, benefits
  - ii. Designing a cardiovascular training workout for improvement
  - iii. Designing a cardiovascular training workout for maintenance
  - iv. Review previous concepts
- Q. Fitness assessments – post-tests
  - i. Heart rate/blood pressure
  - ii. Rockport walk test
  - iii. Sit and reach test
  - iv. Percent body fat
  - v. Review

### **III. Textbooks**

This course requires no textbook.

## Required Course Materials

*Athletic Shoes, water*, appropriate attire (loose-fitting, comfortable clothing that allows a full range of motion around all of the joints of the body), and a wire-bound notebook. Students who come to class without athletic shoes and/or water will NOT be allowed to participate in exercise.

## Reference Materials

American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription, 6<sup>th</sup> Edition*. Philadelphia, PA: Lippincott, Williams and Wilkins 2000.

American College of Sports Medicine. "ACSM Position Stand on The Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory and Muscular Fitness, and Flexibility in Adults." *Medicine and Science in Sports and Exercise* 30(6): 975–991, 1998.

American College of Sports Medicine. "Exercise and Type 2 Diabetes: Position Stand." *Med Sci Sports & Ex* 32(7):1345-1360, 2000.

Leon, et al. "Leisure time physical activity and the 16-year risks of mortality from coronary heart disease and all-causes in the Multiple Risk Factor Intervention Trial (MRFIT)." *Int J Sports Med*. 1997 Jul;18 Suppl 3:S208-15.

Kushi, et al. "Physical activity and mortality in postmenopausal women," *JAMA* 1997 277:16.  
[http://jama.ama-assn.org/cgi/content/abstract/277/16/1287?ijkey=c773fcffd39b43d714eada361300ad1952c0c8cf&keytype2=tf\\_ipsecsha](http://jama.ama-assn.org/cgi/content/abstract/277/16/1287?ijkey=c773fcffd39b43d714eada361300ad1952c0c8cf&keytype2=tf_ipsecsha)

Paffenbarger, et al. "The Association of Changes in Physical-Activity Level and Other Lifestyle Characteristics with Mortality among Men," *N Engl J Med*. 1993 25:328(8):574-6.  
<http://content.nejm.org/cgi/content/full/328/8/538?ijkey=70215f02c0ded93c85ed8fcb95fc8b868c05287b>

Schnohr, et al. "Changes in Leisure-time Physical Activity and Risk of Death: An Observational Study of 7,000 Men and Women," *Am J Epidemiol* 2003; 158:639-644.  
<http://aje.oupjournals.org/cgi/content/abstract/158/7/639>

Sharkey, Brian J. *Fitness & Health: 5th Edition*. Champaign, IL: Human Kinetics 2001.  
**(STRONGLY RECOMMENDED)**

Any human anatomy textbook

American College of Sports Medicine <http://www.acsm.org/index.asp>

## Instructional Cost

20 Pedometers, between \$15 - \$40 each plus shipping & tax. Order at wholesale on orders over \$50 (or below wholesale, when available) by contacting Gaiam: Dena Mohr, Customer Service Representative [dena.mohr@gaiam.com](mailto:dena.mohr@gaiam.com). 10-20 Polar Heart rate monitors (@\$75/each)

## Methods of Instruction

Demonstration, participation, lecture, individual assignments, group work. Assessment will be in the form of attendance/participation in class exercises, individual assignments, homework and quizzes given throughout the semester.

<b>A</b>	90 – 100%
<b>B</b>	80 – 89%
<b>C</b>	70 – 79%
<b>D</b>	60 – 69%
<b>F</b>	0 – 59%

## Evaluation

No credit by evaluation. Course is participatory.

## Attendance Policy

The College attendance policy shall be applied.

## Academic Honesty Policy

The College academic honesty policy shall be applied.

## Appendices

### A. Health History Form

- i. All students must complete the Physical Activity Readiness Questionnaire - PAR-Q, from the Canadian Society for Exercise Physiology prior to participating in any physical activity
- ii. Instructor may require students to provide a signed physician consent form as a pre-requisite to ESS101w.
- iii. PAR-Q is available online and may be reproduced if used in its entirety  
[www.csep.ca/pdfs/par-q.pdf](http://www.csep.ca/pdfs/par-q.pdf)

### B. Release Form

- i. All students must read and sign the following statement in order to participate in ESS101w:

As per College policy or as follows in the absence of such policy language:

I, \_\_\_\_\_, wish to participate in the following College of Micronesia-FSM course or program, ESS101w Walking for Health and Fitness, as a student. I understand that this class is a voluntary program and is not required for my graduation. I agree to abide by all safety rules and regulations in effect during this course or program.

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I wish to participate in the above-described course or program at the College of Micronesia -FSM, and agree that the College of Micronesia-FSM, and their employees

are not responsible for my participation in this program, or for any injuries that may occur during my participation in this program, or by the utilization of their equipment.

Further, the instructor of this course or program in the event that he or she believes, with or without medical evidence, that I may not participate in this course or program, or that I have physical limitations that may prevent me from participating in this course or program, has absolute discretion, and may terminate my continued participation in the course or program, at any time, with or without a valid reason. However, this discretion is not an obligation of the College of Micronesia-FSM, or its employees, nor a duty, and any failure to prevent participation on my behalf, or to limit the amount of activities involved in the course or program on my behalf, does not give rise to a renunciation of or exception to this knowing and voluntary waiver.

As a result, I agree, and voluntarily assume all responsibility for my own safety and well-being, while participating in the course or program, and agree to waive any claims for liability, injury, or other damages as a result of injury or death, against the College of Micronesia-FSM or their employees. I enter into this waiver knowingly and in advance of my participation in the course or program. By signing this waiver I will forever release any future claims against the College of Micronesia-FSM and their employees, arising out of any accident, injuries, death or other damages, on behalf of myself or my heirs or dependents, due to any accident, or other mishap, including acts of god, that may arise upon my participation in the course or program.

Dated: \_\_\_\_\_ Print Name

\_\_\_\_\_ Signature

C. Rockport Walk Test

i. Reference: *ACSM's Guidelines for Exercise Testing and Prescription, 6<sup>th</sup> Edition*

ii. Protocol

- Begin with a 3 minute warm-up at a comfortable pace
- Make sure students understand that AFTER the warm-up they will need to **walk** 1 mile as fast as they can, without risking injury.
- Students may adjust speed as necessary throughout the test.
- When student completes the mile, record the time it took (not including the warm-up):  
 minutes,
- **THEN** take the student's heart rate for one minute:  BPM
- **Predict VO<sub>2</sub>max**
  - **132.853 – (0.1692 x body mass in kg) – (0.3877 x age in years) + (6.315 x gender) – (3.2649 x time in minutes) – (0.1565 x heart rate BPM)**
    - **Gender** = 0 (females); 1 (males)
    - **Mass in kg** = weight in lbs ÷ 2.2

$$\text{VO}_2\text{max (mL/kg/min)} = 132.853 - (0.1692 \times \text{_____}) - (0.3877 \times \text{_____}) + (6.315 \times \text{_____}) - (3.2649 \times \text{_____}) - (0.1565 \times \text{_____}) = \text{_____ mL/kg/min}$$

iii. Interpretation of results

**Norms for Relative Maximal Oxygen Uptake (mL/kg/min)**

<b>Relative Max O<sub>2</sub> Uptake</b>		<b>AGES</b>					
<b>MEN</b>		<b>18-25</b>	<b>26-35</b>	<b>36-45</b>	<b>46-55</b>	<b>56-65</b>	<b>65+</b>
	<i>Excellent</i>	>60	>56	>51	>45	>41	>37
	<i>Good</i>	52-60	49-56	43-51	39-45	36-41	33-37
	<i>Above average</i>	47-51	43-48	39-42	35-38	32-35	29-32
	<i>Average</i>	42-46	40-42	35-38	32-35	30-31	26-28
	<i>Below Average</i>	37-41	35-39	31-34	29-31	26-29	22-25
	<i>Poor</i>	30-36	30-34	26-30	25-28	22-25	20-21
	<i>Very Poor</i>	<30	<30	<26	<25	<22	<20
<b>WOMEN</b>		<b>18-25</b>	<b>26-35</b>	<b>36-45</b>	<b>46-55</b>	<b>56-65</b>	<b>65+</b>
	<i>Excellent</i>	>56	>52	>45	>40	>37	>32
	<i>Good</i>	47-56	45-52	38-45	34-40	32-37	28-32
	<i>Above average</i>	42-46	39-44	34-37	31-33	28-31	25-27
	<i>Average</i>	38-41	35-38	31-33	28-30	25-27	22-24
	<i>Below Average</i>	33-37	31-34	27-30	25-27	22-24	19-22
	<i>Poor</i>	28-32	26-30	22-26	20-24	18-21	17-18
	<i>Very Poor</i>	<28	<26	<22	<20	<18	<17



- D. Typical class structure
  - i. Two days per week
    - 1. 10 - 15 minutes travel to locker rooms, change into exercise clothes
    - 2. 5 – 10 minute warm up, with verbal instruction
    - 3. 65 – 75 minutes walking/instruction
    - 4. 5 - 10 minutes of flexibility/relaxation exercises
    - 5. 10 – 15 minutes change out of exercise clothes/shower
  - ii. Three days per week
    - 1. 10 - 15 minutes travel to locker rooms, change into exercise clothes
    - 2. 5 – 10 minute warm up, with verbal instruction
    - 3. 35 – 45 minutes walking/instruction
    - 4. 5 - 10 minutes of flexibility/relaxation exercises
    - 5. 10 – 15 minutes change out of exercise clothes/shower
- E. Class enrollment limit
  - i. **No more than 20 students**
  - ii. Exceptions may be made by permission of Division Chair of Exercise Sports Science
- F. Adapted Instruction
  - i. Students who are unable to (or who should not) perform specific exercises due to injury, pregnancy, or other condition(s), will be assigned alternate exercises and/or assignments by the instructor with no detriment to final grade/status in the course
  - ii. Students who require a physician’s consent to participate in physical activity (as identified on a PAR-Q questionnaire) at term start will be required to complete physical fitness examination by a medical doctor and receive physician’s consent prior to commencing the course.
- G. Conditions and definitions
  - i. Core refers to an outcome that must be attained in order to pass the course.
  - ii. Peripheral refers to an outcome that ought to be attained but non-attainment will not cause the student to fail the course.
- H. Recommended course materials
  - i. Human anatomy coloring book
  - ii. Female students – appropriately sized sports bra
  - iii. Male students – appropriately sized jock strap
- I. Safety procedures
  - i. CPR certification strongly recommended for instructors of this course
  - ii. Students should be instructed on the first day of class and on their syllabus:
    - 1. STOP exercising if you experience any of the following symptoms:
      - a. Severe breathlessness
      - b. Severe Joint Pain
      - c. Nausea/dizziness
      - d. Extreme chest pain
      - e. Light headedness
    - 2. NOTIFY the instructor immediately. Do NOT isolate yourself by seeking privacy