I. COURSE TITLE: PED 106 Deep Water Running **(Explosive Power)** 1 hour PED credit
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II. PREREQUISITES: Deep water depth of 8' requires swimming ability. Water shoes required for safety on deck.

III. COURSE DESCRIPTION: This course is outlined to teach the benefits of exercising at a greater level of intensity in deep water while submerged to the neck. Deep water exercise provides a comfortable workout while improving cardiovascular endurance. With breathing rate in the aerobic range additional benefits include stress management, weight control, and training to be used for land sports. Deep water exercise provides exhilaration and enjoyment.

IV. RATIONALE: This course is compatible with the mission of Mississippi College, a Christian College, because of the value placed on stimulating physical development. Deep water running is the safest way to exercise. It is designed to attract both the conditioned and the physically challenged student. It can be a dynamic exercise and a challenge for both men and women or it can be a soothing and healing experience depending upon the energy output of the student. Deep water running is one of the most beneficial types of physical activity. Exercises are performed in the deep water with the assistance of buoyancy devices. They include stretching, abdominal work, targeting specific muscle pairs, and running to aid in the following benefits listed in the AKWA and the AEA Aquatic Fitness Research Journal:

A. When submerged to the neck, increased water pressure in the chest cavity will result in a slight lower heart rate while exercising but VO_2 demand is greater for lower extremity work in water when compared to land exercise.
B. When lactic acid levels are measured within the muscle, higher levels are recorded while exercising vigorously in water than when compared to a similar exercise performed on land.
C. Three water principles (pressures, buoyancy, and resistance) help with a variety of benefits:
   1. The pressures of the water place a subtle compression on the vessels which improve circulation.
   2. The pressures of the water helps to rid the body of edema.
   3. The buoyancy and depth of the water provides a natural traction effect in the stretched vertical position and provide a reduction of the load to the spine.
   4. The buoyancy of the water aids in increasing flexibility and range of motion.
   5. The buoyancy of the water provides little impact to the body while exercising. In this respect, deep water exercise is considered a non-weight bearing exercise.
   6. The currents of the moving water create extra resistance and require more energy to move especially since the body is submerged to neck level. Traveling in the powerful water increases strength and the endurance level for land sports. In this respect, deep water is considered a light weight bearing exercise which can be intensified as equipment is added.
   7. A combination of water principles in the deep water decreases pain during movement and can be used to maintain physical fitness with most injuries and post-surgical procedures. Contraindications: open wounds, burns, staples, stitches, and permanent casting.
   8. With increased water pressure on the chest cavity one breathes deeper from the diaphragm.
   9. Pushing muscles through the swirling water increases the fast twitch fibers which can grow two (2) times as large with proper training.

D. Deep water exercise is an effective means of cross training for aerobic or anaerobic exercises providing an alternative medium.

V. LEARNING OBJECTIVES AND OUTCOMES: Upon course completion a student will:

A. Have gained knowledge of deep water routines which can be used as a lifetime activity.
B. Have improved endurance, flexibility, and increased performance skills to be used on land.
C. Gain knowledge that this type of exercise can be channeled to give the best possible quality of life at various ages and body conditions.
D. Better understand the benefits of deep water running.
E. Have had an opportunity to develop interpersonal relationships while providing fun and enjoyment during this course.

VI. ACADEMIC INTEGRITY: It is expected that a student attending Mississippi College will be scrupulously honest. Therefore, plagiarism and cheating will be dealt with in accordance with the policies of the university. These policies are stated in the current Undergraduate Bulletin, Policy 2.19.

VII. COURSE TOPICS: The major topics to be considered are:

A. Deep water exercise benefits
B. Aquatic temperatures
C. Aquatic chemicals

VIII. INSTRUCTIONAL METHODS: Instructional procedures will include:

A. Explanation of deep water benefits, aquatic temperatures, and chemicals.
B. Demonstration of proper body alignment and movement for water fitness exercises and stretches.
C. Demonstration and explanation for use of the following types of equipment:
   1. Cuffs
   2. Bells
   3. Buoyancy belt
   4. Webs
   5. Seahorses
   6. Hydrorider professional bike (water shoes required)
D. Determining the body's breathing rate related to exercise intensity through the Rate of Perceived Exertion (RPE) scale with explanation of warning signals alerting the body to slow down.
E. Deep Water Running DVD's.
F. Explanation of a water walk assessment which will be administered at the beginning and end of the semester to determine gains in water fitness. Private appointments may be set to assess student progress.
G. For variety, water volleyball (anaerobic activity) will be explained and played on a voluntary basis during the semester.
H. A sample of the following will be demonstrated and explained during mid semester for the student to have a well rounded water fitness education of vertical exercises to be used for volume training: Water Walking, Water Aerobics, Liquid Abs, Oodles of Work, Aqua Power Step, Splash Plyometrics, and Dynamic Stretching.
I. Proper breathing techniques will be discussed.

J. If lightening is occurring during class time or the pool is experiencing equipment problems, the class will meet on deck for a stretching program which include water fitness messages using caricatures.
K. During any emergency follow the directions of the Lifeguard such as, if alarm sounds all must exit building.

IX. ASSIGNMENTS:

Students will complete a medical health questionnaire on the first day of class. Private appointments will be set if necessary. For safety purposes, differentiation must be made for pool space and type of equipment with the following considerations:

A. Negative buoyancy vs positive buoyancy
B. Beginner exerciser vs experienced exerciser
C. Normal joints vs impaired joints
D. Advanced swimmer vs novice swimmer

This will be accomplished during the first class meeting by discussion and explanation.

A Water Walk Assessment will be administered at the beginning of the semester to establish a comparison factor for the second one given during the latter part of the semester.

X. EVALUATION: Class participation is required. Evaluation will be based on recorded attendance, participation, assessments, etc. The student will receive a grade of Credit or No Credit for the course. **Non-participation in water exercises will not be condoned without a doctor's or instructor's approval.**

XI. OTHER COURSE INFORMATION:

A. FITNESS TEST/SKILLS ASSESSMENTS: A water walk assessment will be administered at the beginning of the semester to establish a comparison factor for the second one given during the latter part of the semester.
B. ABSENCES: During fall and spring semesters a student is allowed two (2) absences for activity classes. Should a student obtain the third absence, he/she will not receive credit for the course. A limited number of make-ups will be allowed for emergencies. See the instructor for schedule.
C. SPECIAL ACCOMMODATIONS: In order for a student to receive disability accommodations under Section 504 of the Americans with Disabilities Act, he or she must schedule an individual meeting with the Director of Student Counseling Services **immediately upon recognition of their disability** (if their disability is known they must come in before the semester begins or make an appointment **immediately** upon receipt of their syllabi for the new semester). The student must bring with them written documentation from a medical physician and/or licensed clinician that verifies their disability. If the student has received prior accommodations, they must bring written documentation of those accommodations (example Individualized Education Plan from the school system). Documentation must be current (**within 3 years).**The student must meet with SCS **face-to face** and also attend two (2) additional follow up meetings (one mid semester before or after midterm examinations and the last one at the end of the semester). Please note that the student may also schedule additional meetings as needed for support through SCS as they work with their professor throughout the semester. Note: Students must come in **each semester** to complete their Individualized Accommodation Plan (example: MC student completes fall semester IAP plan and even if student is a continuing student for the spring

semester they must come in again to complete their spring semester IAP plan). Student Counseling Services is located in Alumni Hall Room #4 or they may be contacted via email at MBryant@mc.edu or RWard@mc.edu . You may also reach them by phone # **601-925-7790.**

D. Tuition refunds will not be made to students who drop a class after the first week.

XII. INSTRUCTIONAL MATERIALS AND BIBLIOGRAPHY:

Text: None

Contemporary reference books:

Aquatic exercise association manual. (2012). Nokomis, FL: AEA.
Alexander, Christine. (2011). Water Fitness Lesson Plans and Choreography. Human Kinetics.

Classic reference books:

Arthritis foundation instructor's manual. (1990). Arthritis FoundationBallatore, Ron. (1990). Swimming and aquatics today. West Publishing CompanyBates, Andrea and Hanson, Norm. (1992).
Aquatic exercise therapy. Swystun & SwystunBaum, Glenda. (1998).
Aquarobics-the training manual. W.B. Saunders.Casten, C. (1994).
Aqua aerobics today. St. Paul, MN: WestMcWaters, J. Glenn. (1988).
Deep water exercise for health and fitness. Publitec Editions

DVD's:

Milling, Pamela G. (2012). When water moves miracles happen
1. Aqua power step.
2. Athletic conditioning.
3. Deep water running.
4. Water aerobics.
5. Water walking.

PUBLICATIONS:

Milling, Pamela G. (2012. April). Bone density revelation. www.aeawave.com/news&more/healthynews.
Milling, Pamela G. and Ward PhD, Rob. (2011, April/May). Water fitness for athletes education and performance benefits. AKWA Magazine.
Brossman, Steve. (1993, December). Interval training. AKWA letter.
Ivens M.S., Pauline. (1997). Recipe for deep water exercise. AKWA letter.
Sova, Ruth. (1994, February). Why use rpe? AKWA letter.

WEBSITE:

http://www.mc.edu/water-fitness

http://www.mc.edu/quicklinks/facultyhomepages/pamelamilling

RATE OF PERCEIVED EXERTION (RPE) SCALE

Imagine a scale from 0 to 10 which represents one's breathing rate and measures the intensity of the activity.

0	1	2	3	4	5	6	7	8	9	10

0 Total rest or sleeping; unaware of breathing. You will not experience this level during exercise.

1 Reading a book or sitting at your desk; unaware of breathing. You will not experience this level during exercise.

2 Getting dressed or taking a shower; unaware of breathing. You will not experience this level during exercise.

3 Walking to the other end of the house; slightly aware of breathing. You may experience this in the beginning of warm-up.

4 Walking a very short distance, breathing slightly elevated. Experience this level during warm-up.

5 Walking around the block or to a near-by store; breathing elevated but can carry on a conversation. Experience this level at the end of warm-up.

6 Continuing to exercise briskly while breathing becomes deeper but you're feeling good. Experience this level in the beginning of your aerobic session.

7 Exercising vigorously; breathing is heavier with a slight feeling of fatigue. Carry this level as long as you can comfortably during your aerobic session in order to reach maintenance.

8 Exercising very vigorously; breathing is much deeper with a feeling of fatigue. To become comfortable in this level, push to it for short periods after maintaining level 7. In maintenance, this difficult aerobic level produces rapid results.

9 90% workout; exercising very vigorously; breathing is labored; body fatigued. Some push to this level for very short periods after achieving level 8. This level difficult and should not be maintained.

10 100% workout; you feel as if you cannot catch your breath. Exercising too hard.