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| **Debremarkos University**  **College of Natural and Computational Science**  **Department of Sport Science** | | | | | **Last Updated January, 2012 E.C** | | |
| **Degree Program** | **MSc. Degree in Sport Science ( Health and Fitness)** | | | | | | |
| **Course Category** | Core Course | | | | | | |
| **Course Title /code** | **Exercise Testing, Prescription and Supervision (Spsc522)** | | | | | | |
| **Course Weight** | 7 ECTs | | | | | | |
| **Credit Hour:** | 4 | | | | | | |
| **Contact Hour** | 4 | | | | | | |
| **Course Information** | **Academic year: 2012 E.C semester: II**  **Meeting day 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Meeting time 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Meeting location: Building: 046-R:01** | | | | | | |
| **Instructor’s Name** | **Dr. Getu Teferi ( Ph.D in Health Fitness and Exercise Medicine)** | | | | | | |
| **Instructor’s Contact Information** | * **Office: Dept. head** * **Email: teferigetu36@gmail.com** * **Contact hour** | | | | | | |
| **Student Work Load** | Lecture | Tutorial | Individual work | Group  work | Assessment | Practical/field work | Total |
| 60hr | 16hr | 60hr | 15hr | 10hr | 96hr | 189hr |
| **Mode of Delivery** | **Semester Based** | | | | | | |
| **Course Description** | This course describes knowledge, skills and abilities for exercise testing and prescription and reviews the health-related benefits of regular physical activity. The course contents included under this course are: benefits and risks associated with physical activity, pre-participation health screening, pre-exercise evaluation, health-related physical fitness testing and interpretation, clinical exercise testing, interpretation of clinical exercise test results, general principles of exercise prescription, exercise prescription for healthy populations with special considerations and environmental considerations, exercise prescription for patients with cardiovascular and cerebro-vascular disease, exercise prescription for populations with other chronic diseases and health conditions, behavioral theories and strategies for promoting exercise. | | | | | | |
| **Course objective** | **At the end of the course students will be able to: -**   * In satisfactorily completing this course, students will be able to understand Health Appraisal and Risk Assessment as well as Exercise Testing, Exercise Prescription and supervision in different settings * Developing and implementing measures for individual physical activity and health promotion program for specific people who are prone to certain diseases and health risks * Scientific evaluation of specific physical activity and health promotion programmes. * Relationships between physical activity, exercise, and health | | | | | | |
| **Method of Teaching** | * Lecture * Discussions * Projects/ field work /practices * Presentations * Seminar * Lab Practice | | | | | | |
| **Mode of Assessment and Evaluation** | * **Continuous Assessment 40%**   + Assignment (practical) 20%   + Seminar 20% * **Final Exam 60 %** | | | | | | |
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| **Course Policy** | **Grading:** As per the academic policy of the university.  **Class Participation:** The success of this class and your learning experience is dependent on your engagement and participation. You should come well prepared and constructively engage in class discussions.  **Attendance policy:** As per the legislation of the university: Students are expected to be on time, attend all class meetings and be prepared for in class assignments and projects. Excused absences include the following: illness (must bring a receipt or note from a doctor), family death, athletic/academic event, and others at the discretion of the instructor. For known upcoming absences, students must contact the instructor at least one week in advance to the missed class to make up work. In the case of illness or some other unforeseen absence, the student must contact the instructor via e-mail or telephone. At the next attended class meeting the student will discuss material that is to be completed. It is the student's obligation to pursue any make-up work.  **Students Preparation**: Students are expected to read assigned material (e.g., chapters, articles) prior to class. Classes will be based on discussion lead by the students and moderated by the instructor. Although many students must work to meet living expenses, employment and personal responsibilities are not a consideration for missed classes, late or incomplete assignments, the course content, or the course schedule. Student employment does not take priority over academic obligations.  **Class Discipline**: All sound emitting technology is required to be turned off during the class meeting time. No sound emitting technology (e.g., cell phones, smart phones, iPads, Tablets, pagers, etc.) is allowed at any time during the class period. Students who are observed using any form of technology inappropriately (e.g., sending text messages from cell phones, visiting social networking sites from laptops, etc.) will be dismissed from class for the day, counted as an absence, and not permitted to make up missed assignments. Additionally, no laptop computers (e.g., notebooks, tablets, etc.) will be permitted for use during class time unless with permission from the instructor.  **Dress Code:** all students will need to wear suitable and proper sportswear in each and every practical class | | | | | | |

**Course Contents**

**Chapter One: Benefits and Risk Associated with Physical Activity**

* 1. Public Health Perspective for Current Recommendations
  2. Risks Associated with Exercise
     1. Sudden Cardiac Death Among Young Individuals
     2. Exercise-Related Musculoskeletal Injury
  3. Pre-participation Health Screening
  4. Recommendations for a Medical Examination Prior to Initiating Physical Activity
  5. Risk Stratification for Patients with Cardiovascular Disease
  6. Pre-exercise Evaluation
     1. Medical History,
     2. Physical Examination
     3. Laboratory tests
        1. Blood Pressure
        2. Lipids and Lipoproteins
        3. Blood Profile Analyses
     4. Pulmonary Function
     5. Contraindications to Exercise Testing

**Chapter Two: Health-Related Physical Fitness Testing and Interpretation**

* 1. Purposes of Health-Related Fitness Testing
  2. Basic Principles and Guidelines
  3. Body Composition
  4. Cardio respiratory Fitness
  5. Muscular Strength and Muscular Endurance
  6. Flexibility

**Chapter Three: Clinical Exercise Testing and Interpretation of Test Results**

3.1 Indications for a Clinical Exercise Test

3.2 Conducting the Clinical Exercise Test

* *Testing Mode and Protocol*
* *Monitoring and Test Termination*
* *Post-exercise*
* *Safety*

3.3 Interpreting the Clinical Exercise Test

* *Heart Rate Response*
* *Blood Pressure*
* *Response Rate-Pressure*
* *Product Electrocardiogram Symptoms*
* *Exercise Capacity*
* *Cardiopulmonary Exercise Testing*
* *Maximal versus Peak Cardiorespiratory Stress*

3.4 Diagnostic Value of Exercise Testing for the Detection of Ischemic Heart Disease

* *Sensitivity, Specificity, and Predictive Value*
* *Clinical Exercise Test Data and Prognosis*
* Clinical Exercise Tests with Imaging
* Field Walking Tests

**Chapter Four: General Principles of Exercise Prescription**

* 1. An Introduction to the Principles of Exercise Prescription
  2. General Considerations for Exercise Prescription
  3. Components of the Exercise Training Session
  4. Aerobic (Cardio respiratory Endurance) Exercise
* Frequency of Exercise
* Intensity of Exercise
* Exercise Time (Duration)
* Type (Mode)
* Exercise Volume (Quantity)
* Rate of Progression
  1. Muscular Fitness
* Frequency of Resistance Exercise
* Types of Resistance Exercises
* Volume of Resistance Exercise (Sets and Repetitions)
* Resistance Exercise Technique
* Progression/Maintenance

4.6 Flexibility Exercise (Stretching)

* Frequency
* Types,
* Time and
* Volume of Flexibility Exercises
* Neuro-motor Exercise

**Chapter Five: Exercise Prescription for Healthy populations**

5.1 Children and Adolescents

* Exercise Testing
* Exercise Prescription
* Special Considerations

5.2 Low Back Pain Exercise

* Exercise Testing
* Exercise Prescription
* Special Considerations

5.3 Older Adults

* Exercise Testing
* Exercise Prescription
* Special Considerations for Exercise Programming

5.4 Pregnancy

* Exercise Testing
* Exercise Prescription
* Special Considerations

**5.5 Environmental Considerations for Exercise Prescription**

* Exercise in High-Altitude Environments
* Exercise Prescription
* Special Considerations
* Organizational Planning
  1. Exercise in Cold Environments
* Medical Considerations: Cold Injuries
* Clothing Considerations
* Exercise Prescription
  1. Exercise in Hot Environments
* Counteracting Dehydration
* Medical Considerations: Exertional Heat Illnesses
* Exercise Prescription
* Special Considerations

**Chapter Six: Exercise Prescription for Patients with Cardiac, Peripheral, Cerebrovascular, and Pulmonary Disease**

6.1 Cardiac Diseases

* Inpatient Cardiac Rehabilitation Programs
* Outpatient Cardiac Rehabilitation
* Patients with Heart Failure
* Patients after Cardiac Transplantation
* Patients with Peripheral Artery Disease

6.2 Exercise Prescription for Patients with a Cerebrovascular Accident (Stroke)

* Exercise Testing
* Exercise Prescription
* Exercise Training Considerations

6.3 Exercise Training for Return to Work

6.4 Pulmonary Diseases

* Asthma
* Chronic Obstructive Pulmonary Disease
* Exercise Training for Pulmonary Diseases Other than Chronic

Obstructive Pulmonary Disease

**Chapter Seven: Exercise Testing, Prescription and Special Considerations for Populations with Other Chronic Diseases and Health Conditions**

* 1. Arthritis
  2. Cancer
  3. Cerebral Palsy
  4. Diabetes Mellitus
  5. Dyslipidemia
  6. Fibromyalgia
  7. Human Immunodeficiency Virus
  8. Hypertension
  9. Intellectual disability and Down Syndrome
  10. Kidney Disease
  11. Metabolic Syndrome
  12. Multiple Sclerosis
  13. Osteoporosis
  14. Overweight and Obesity
  15. Parkinson Disease
  16. Pulmonary Diseases
  17. Chronic Obstructive Pulmonary Disease
  18. Spinal Cord Injury
  19. Individuals with Multiple Chronic Diseases and Health Concerns

**Chapter Eight: Behavioral Theories and Strategies for Planning Exercise**

* 1. Exercise Prescription
     + Frequency/Time
     + Intensity
     + Type
  2. Theoretical Foundations for Understanding Exercise Behavior, Social Cognitive 9.2.1 Theory and Self-Efficacy
     + Trans-theoretical Model
     + Health Belief Model
     + Self-Determination Theory
     + Theory of Planned Behavior
     + Social Ecological
  3. Theoretical Strategies and Approaches to Change
     + Behavior/Increase Adherence
     + Building Self-Efficacy
     + Brief Counseling and Motivational Interviewing
     + Stage of Change Tailored Interviewing
     + Group Leader interactions
     + Cognitive-Behavioral Approaches
     + Social Support
     + Association versus Disassociation
     + Affect Regulation
     + Relapse Prevention
  4. Special Populations

**Reference**

* ACSM’s (2014). Guidelines for Exercise Testing and Prescription; 9thed., ACSM Group Publisher: Kerry O’Rourke, China.
* David C. Nieman (2011). Exercise Testing and Prescription: A Health-Related Approach, Seventh Edition, McGraw-Hill, New York
* ACSM’s (2018). Guidelines for Exercise Testing and Prescription, 10th ed., Lippincott, Williams and Wilkins, Philadelphia.