

Exercise Science Program (Minor or concentration)

Director: *Brian R. Goslin*

Professor Emeritus: *Alfred W. Stransky*

Professor: *Robert W. Jarski*

Associate professors: *Brian R. Goslin, Charles R. C. Marks*

Clinical professors: *Barry A. Franklin, Steven J. Keteyian, Murray B. Levin, Robert A. Levine, Augustine L. Perrotta*

Clinical associate professors: *John F. Kazmierski, Creagh E. Milford, Rajendra Prasad*

Adjunct associate professor: *Victoria Kimler*

Adjunct assistant professor: *Jack T. Wilson*

Clinical assistant professors: *Patricia Brooks, Jeffrey H. Declaire, Mario J.C. DeMeireles, Albert A. DePolo, Scott Eatborne, Johnathan Ehrman, William E. Hill, Andrew J. Madak, Chandra S. Reddy*

Clinical instructors: *Mary Ann Coker, Terry Dibble, Lucas Humphrey, Nancy S. Kennedy, Sheldon Levine*

The exercise science program offers elective courses for students interested in the relationship among physical activity, weight control, disease prevention, stress management and nutrition for optimal health and performance.

Opportunities exist for students to establish personal programs of exercise, weight control, nutrition, stress management and substance abuse avoidance. Disease prevention and quality of life are components of many of the course offerings. Selecting courses in exercise science can be especially meaningful to students entering a health-related career, with the current emphasis placed on health promotion and disease prevention within the health care delivery system.

Students can complete a baccalaureate degree in health sciences with an exercise science academic concentration. See Health Sciences Program in this section of the catalog. For a description of the Master of Science in exercise science program, see the *Oakland University Graduate Catalog*.

Minor in exercise science

A 22 credit minor in exercise science is available to students in any degree program seeking a formal introduction to the exercise science field. An undergraduate degree focusing on exercise science may be designed by including this minor in a Bachelor of Science in wellness, health promotion & injury prevention, a Bachelor of Integrative Studies, or a Bachelor of Science in health sciences plan of work. Courses required for the minor include: HS 201; EXS 204, 304*, 306*, and 350*; and 6 credits from the following electives, EXS 103*, 105*, 202, 203, 205, 207*, 215, 321, 360, 403, 405, 410, 415, 425, 435, 445, 450, 465, 483, 493 (2 credits maximum); WHP 208, 210, 305, 310, 360, 420. Courses denoted with an asterisk (*) represent prerequisite courses for admission to the Master of Science in exercise science program. (An additional prerequisite for admission to this graduate program is STA 225 or 226 or PSY 251.)

Course Offerings

EXS 103 Exercise (Strength Training) and Health Enhancement (2)

Examination of lifestyle factors related to disease prevention and improved quality of life. Combines regular strength training exercise and health enhancement lectures. Offered all semesters.

EXS 105 Cardiovascular Fitness Training (2)

Examination of lifestyle factors related to disease prevention and improved quality of life. Combines exposure to walking-jogging exercise, aerobics exercise, standard cardiovascular training equipment, swimming exercise and health enhancement lectures. Offered all semesters.

EXS 202 Introduction to Exercise Science (2)

Introduction to the basic concepts from different areas of exercise science (e.g. motor learning, exercise physiology, biomechanics). Offered summer semester.

EXS 203 Group Exercise Instruction I (2)

Theory and practice of safe and effective exercise instruction for individual and group resistance training programs. Excellent preparation for personal training. Focus on program design, practical skills of exercise instruction, progression, effective communication, facilities and equipment, legal issues, and risk management. Summer semester.

Prerequisite: EXS 103 or instructor permission.

EXS 204 Weight Control, Nutrition and Exercise (4)

Exploration of the role of exercise and optimal nutrition in weight control/loss. Emphasis on effective eating, energy balance, physiology of weight loss, behavior modification and health risks of obesity. Includes practical laboratory experiences. Recommended for students wishing to develop successful weight loss/control skills and improved nutritional habits. Fall, winter and summer semesters.

EXS 205 Group Exercise Instruction II (2)

Theory and practice of safe and effective exercise instruction for group aerobic exercise training programs. Focus on training class styles and formats, practical skills of exercise instruction, progression, cueing, pattern building, choreography, and learning styles including visual, kinesthetic and auditory. Land- and water-based programs. Summer semester.

Prerequisite: EXS 105, EXS 203 or instructor permission.

EXS 207 Safety and First Aid in Exercise Settings (2)

Understanding of procedures in the immediate and temporary care of victims of an accident or sudden illness in exercise settings. Safety concerns regarding exercise facilities, equipment and programs. Certification in American Red Cross "Responding to Emergencies" and "Basic Life Support" upon completion. Fall, winter and summer semesters.

EXS 215 Stress Management (2)

Concepts and techniques to enable students to manage stress more effectively. Offered every term.

EXS 304 Exercise Physiology (3)

Effects of exercise and physical training on the physiological systems of the body, with emphasis on cardio-respiratory systems. Includes muscle contraction mechanisms, circulatory and respiratory adjustment during exercise, and nutrition for physical activity. Cross-listed with AHS 304.

Prerequisite: BIO 111 and BIO 207.

Co-requisite: EXS 306.

EXS 306 Exercise Physiology Laboratory (1)

Laboratory experiences are provided for insight into the dynamics of human movement from research and clinical perspectives. Cross-listed with AHS 306.

Prerequisite: BIO 111 and BIO 207.

Co-requisite: EXS 304.

EXS 321 Basic Athletic Training (2)

Course directed to competitive sports and the recognition and immediate care of athletic injuries. Evaluation and treatment procedures and techniques are presented and practiced. Identical with PT 321. Credit will not be awarded for both EXS 321 and EXS 521.
Prerequisite: BIO 205, BIO 207, EXS 350.

EXS 350 Human Motion Analysis (4)

The anatomical kinesiology and the mechanical bases of human movement in daily life, exercise, rehabilitation, sport, and work settings are analyzed. *Satisfies the university general education requirement for a writing intensive course in general education or the major, not both. Satisfies the university general education requirement for the capstone experience. Prerequisite for writing intensive: completion of the university writing foundation requirement.*
Prerequisite: BIO 205.

EXS 360 Healthy Lifestyle Choices (2)

A biopsychosocial approach to exercise and other healthy lifestyle choices. Focus is on the dimensions of wellness, factors influencing lifestyle choices, the theory and practice of behavior change, and health promotion concepts. Credit will not be granted for both EXS 360 and EXS 560. Offered all semesters.
Prerequisite: PSY 100, EXS 204 or EXS 304 or HS 201.

EXS 401 Practicum in Exercise Science (5)

Supervised exercise science experience in a program-approved setting with application of HS/EXS and general education knowledge. Students demonstrate exercise science competencies, keep a daily journal, write a critical analysis of the experience, and successfully pass site supervisor evaluation. *Satisfies the university general education requirement for the capstone experience.* All semesters.
Prerequisite: HS 201, EXS 304, EXS 350, completion of general education knowledge foundation courses, and EXS program director permission.

EXS 403 Human Performance Enhancement (2)

Advanced topics and trends in modern strength and conditioning program design and implementation. Topics include muscle physiology, neuromuscular physiology, performance profiles, periodization, and the theory behind developing adequate strength, mass, flexibility, power, and stability programs. Credit will not be awarded for both EXS 403 and EXS 503.
Prerequisite: EXS 103 or instructor permission.

EXS 405 Health and Disease (2)

Examination of the health and medical record with a focus on the history, physical exam, and laboratory and imaging studies. The pathogenesis of representative diseases that are lifestyle related are emphasized. Credit will not be granted for both EXS 405 and EXS 505. Offered summer semester.
Prerequisite: BIO 111 and BIO 207, or instructor permission. BIO 205 recommended.

EXS 406 The Brain and Disease (2)

Reviews current neurological research on the brain in health and disease, including addiction, depression, stroke, viral infections, Alzheimer's and Parkinson's. Emphasis on multidisciplinary research studies on the role of exercise and nutritional antioxidants. Identical with HS 406. Summer elective.
Prerequisite: EXS 304, HS 401 or instructor permission.

EXS 410 Clinical Biomechanics (2)

The pathomechanics of the human musculoskeletal system. Topics include properties of human tissue, mechanisms of injury, pathokinesiology, and principles of musculoskeletal exercise prescription. Credit will not be granted for both EXS 410 and EXS 610. Offered fall semester in even numbered years.
Prerequisite: EXS 350 or instructor permission.

EXS 415 Exercise Endocrinology (2)

A cellular and systems physiology approach to human hormone function during exercise. Interaction of neuron-endocrine responses during exercise and body fluid regulation, homeostasis, the immune system, regulation of fuel use, biological rhythms, reproductive cycles, analgesia and tissue repair. Hormones are ergogenic aids. Offered summer term.

Prerequisite: BIO 207 and EXS 304, or instructor permission.

EXS 425 Exercise Electrocardiography (2)

Theoretical and applied concepts of resting and exercise electrocardiography (ECG), the normal ECG, and factors contributing to abnormal ECG. Students experience exercise test applications of the ECG and learn to recognize life-threatening arrhythmias. Credit will not be granted for both EXS 425 and 625. Offered summer semester.

Prerequisite: EXS 304 or permission of instructor.

EXS 435 Environment and Human Performance (2)

Human adaptation to major factors that can significantly influence human movement in diverse micro- and macro-environments, including temperature, altitude, precipitation, light, noise and socio-cultural factors. Credit will not be granted for both EXS 435 and EXS 635. Offered fall semester in odd-numbered years.

Prerequisite: EXS 304.

EXS 445 Physical Activity and Aging (2)

The effects of aging on physical work capacity, body composition, and cardiovascular, pulmonary, neuromuscular and musculoskeletal function. The principles for prescribing and conducting physical conditioning programs to retard the aging process are included. Credit will not be granted for both EXS 445 and EXS 545. Offered summer term.

Prerequisite: EXS 304 and EXS 350.

EXS 450 Children and Exercise (2)

Physical activity and the growth, maturation, motor development, and motor learning of children from birth through adolescence. Skill and performance enhancement, exercise program design, biomechanics, and injury and disease prevention are discussed. Credit will not be granted for both EXS 450 and EXS 550. Offered summer term in odd-numbered years.

Prerequisite: EXS 304 and EXS 350.

EXS 465 Corporate and Worksite Wellness Programs (2)

Concepts underlying corporate and worksite health promotion programs, including: health and exercise program planning, facility planning and design, program management, staffing, equipment selection, safety and legal issues, and marketing. Credit will not be granted for both EXS 465 and EXS 565. Offered summer semester.

Prerequisite: EXS 304 or instructor permission.

EXS 470 Introduction to Personal Training (2)

An introduction to the concepts used in personal training. Covers theoretical knowledge and practical skills needed to prepare for a national certification exam in personal training. Topics include exercise testing, prescription, and leading, progression, individualization, goal-setting, logistics, client motivation, safety, health promoting behaviors and effective communication. Offered summer semester.

Prerequisite: EXS 103, 304, 306, 350.

EXS 475 Advanced Personal Training (2)

Theoretical knowledge and practical skills in advanced personal training including training for special cases: high-performance athletes, musculoskeletal injuries, wheel-chair bound clients, chronic diseases, the elderly, and children. Periodization, plyometrics, exercise with specialized equipment, innovative use

of available resources, and best practices for commercial success also covered. Offered summer semester.
Prerequisite: EXS 470.

EXS 483 Special Topics (1,2,3 or 4)

An advanced course involving the study of current topics in the practical application of exercise principles. Topics vary. May be repeated for additional credit.

Prerequisite: program director permission.

EXS 493 Directed Study and Research (1, 2, 3 or 4)

Special study areas and research in exercise science. May be repeated for additional credit. Offered every semester.

Prerequisite: program permission.

Health Sciences Program

Health Sciences: Director, *Richard J. Rozek*

Professors Emeritus: *Ronald E. Olson, Philip Singer*

Professors: *Gary D. Russi, Kenneth R. Hightower*

Associate professor: *Richard J. Rozek*

Clinical professors: *Moon J. Pak, Donald Bronn*

Clinical assistant professors: *J. Kay Felt, Todd Lininger, Lynne M. Prybys, Monica Wilkinson*

Adjunct assistant professor: *Anthony Tersigni*

Clinical instructors: *Kim Bezas, Jennifer M. Cook, Angela Fern, Jennifer Guthrie, Elizabeth M. Mikulec, Donna Morrison*

A Bachelor of Science in health sciences degree combines a broad spectrum of liberal arts, basic sciences, social sciences and health sciences course requirements and electives for students who desire a generalized health sciences academic credential. In addition, students choose one of five academic concentration areas to obtain greater exposure to a specific health discipline. These five academic areas include exercise science, integrative holistic medicine, pre-pharmacy, pre-physical therapy and pre-health professional studies. The integrative holistic medicine concentration prepares students for many traditional and non-traditional health and service-oriented professions and graduate programs including the Oakland University Graduate Certificate in Complementary Medicine and Wellness. Students completing the exercise science concentration area obtain all the academic course prerequisites necessary for consideration for admission to the Master of Science in exercise science program. Students completing the pre-physical therapy concentration area obtain all the academic course prerequisites necessary for consideration for admission to the Oakland University Doctor of Physical Therapy (DPT) Program. The pre-health professional concentration area incorporates basic science courses to prepare students for the traditional application requirements for medical, dental, optometric, physician assistant and other professional schools. The pre-pharmacy concentration area prepares students for application to the Doctor of Pharmacy program at Wayne State University.