



Faculty

Robert Paulson, chair; Kiwon Kwak, Elaine Neudeck
 Departmental Office: 60 Pacific Auditorium; (707) 965-6344

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The *Exercise Science Department* serves the Pacific Union College community through opportunities for career development in sports professions, for instruction, and for participation.

The department has the following objectives:

- to give thorough instruction in the requirements for participation and leadership in sports activities,
- to develop a knowledge and understanding of health and safety concepts,
- to offer a wide variety of suitable activities, in and out of the classroom, in an environment that supports Christian values,
- to encourage each individual to achieve a high level of total fitness and neuromuscular coordination supporting a wholesome lifestyle, and
- to encourage daily vigorous exercise for everyone in all stages of life.

The Physical Education degree with emphasis in Teacher Education is designed for students wishing to become sports teachers and should be accompanied by a minor in another field. The Exercise Science degree is designed for the student who either seeks to enter professional school (such as medicine or physical therapy) or advance into athletic training. The Personal Training degree is designed for the student who wishes to pursue certification and a career as a Personal Trainer.

Major in Physical Education with Teacher Education Emphasis, B.S.

A minimum of 81 hours (45 upper-division hours)

► *Required Core Courses (71 hours):*

ESAC 368	Water Safety Instructor	2
ESAC 370	Lifeguard Training	2
ESTH 166	Career Development in Exercise Science	3
ESTH 170	Care and Prevention of Athletic Injuries	2
ESTH 183	Theory & Technique of Track and Field	2
ESTH 260	Theory & Technique of Football	2
ESTH 261	Theory & Technique of Volleyball	2
ESTH 262	Theory & Technique of Basketball	2
ESTH 263	Theory & Technique of Softball	2
ESTH 264	Theory & Technique of Soccer	2
ESTH 271+2+3	Theory & Practice of Officiating	2+2+1
ESTH 287	Theory & Technique of Individual Sports	2
ESTH 361	Coaching	2
ESTH 365	Outdoor Experience	3
ESTH 371	Biomechanics	4
ESTH 372	Physiology of Exercise	4
ESTH 373	Intro to Adapted Physical Activity	3
ESTH 374	Motor Learning	4
ESTH 381	Theory & Technique of Racquet Sports	2
ESTH 383	Theory & Technique of Weight Training and Developmental Physical Education	3
ESTH 384	Theory & Technique of Rhythmic Activities	2
ESTH 450	Foundations of Sport Psychology	3
ESTH 470	Management in Exercise Science & Sport	3
ESTH 471	Research Methods in Sports	3
ESTH 476	Physical Education for Children	3
ESTH 490	Ethics in Sports and Exercise	2
HLED 166	Health Education	2

► *Required Cognate Courses (10 hours)*

BIOL 101	Human Anatomy	5
BIOL 102	Human Physiology	5

Exercise Science

Major in Exercise Science, B.S.

A minimum of 66 hours (at least 36 upper-division hours):

► **Required Core Courses (60 hours):**

BIOL 101+102	Human Anatomy + Physiology	5+5
ESAC 370	Lifeguard Training	2
ESTH 166	Career Development in Exercise	3
ESTH 170	Care and Prevention of Athletic Injuries	2
ESTH 265	Theory & Technique of Aquatic Fitness	2
ESTH 287	Theory & Technique of Individual Sports	2
ESTH 371	Biomechanics	4
ESTH 372	Physiology of Exercise	4
ESTH 373	Intro to Adapted Physical Activity	3
ESTH 374	Motor Learning	4
ESTH 378	Fitness Assessment and Exercise Prescription	3
ESTH 381	Theory & Technique of Racquet Sports	2
ESTH 383	Theory & Technique of Weight Training and Developmental Physical Education	3
ESTH 450	Foundations of Sport Psychology	3
ESTH 471	Research Methods in Sports	3
ESTH 490	Ethics in Sports and Exercise	2
ESTH 492	Practicum in Sports Science	3
FDNT 235	Nutrition	3
HLED 166	Health Education	2

► **Required Core Electives (6 hours):**

At least 6 hours from the following:

(To be chosen in consultation with the major advisor)

ESTH 183	Theory and Technique of Track and Field (2)	6
ESTH 260	Theory and Technique of Football (2)	
ESTH 261	Theory and Technique of Volleyball (2)	
ESTH 262	Theory and Technique of Basketball (2)	
ESTH 263	Theory and Technique of Softball (2)	
ESTH 264	Theory and Technique of Soccer (2)	

Recommended Cognate Courses:

(For students in a pre-professional program)

BIOL 111+112+113	Biological Foundations (5+5+5)
CHEM 111+112+113	General Chemistry + Labs (5+5+5)
CHEM 371+372+373	Organic Chemistry + Labs (4+4+4)
CHEM 481+482	Biochemistry (4+4)
PHYS 111+112+113	General Physics (4+4+4)
PSYC 121	General Psychology (4)
SOCI 121	Introduction to Sociology (4)

The B.S. degree curriculum (including all recommended cognates) meets or exceeds all undergraduate science requirements for pre-medical and pre-dental students applying to Loma Linda University and many other schools.

Major in Personal Training, A.S.

A minimum of 46 hours

► **Required Core Courses (46 hours):**

BIOL 101+102	Human Anatomy + Physiology	5+5
COMM 223	Interpersonal Communication	3
ESAC 101A	Jogging	1
ESAC 370	Lifeguard Training	2
ESTH 170	Care and Prevention of Athletic Injuries	2
ESTH 265	Theory & Technique of Aquatic Fitness	2
ESTH 361	Coaching	2
ESTH 371	Biomechanics	4
ESTH 372	Physiology of Exercise	4
ESTH 378	Fitness Assessment and Exercise Prescription	3
ESTH 383	Theory & Technique of Weight Training and Developmental Physical Education	3
FDNT 235	Nutrition	3
MGMT 160	Small Business Management	3
PSYC 121	General Psychology	4

Teaching Credential

Students desiring to enter a program of studies leading to a California teaching credential in physical education should take the B.S. degree in Physical Education, Teacher Education Emphasis. Students will need to pass the physical education portion of the CSET exam one quarter prior to doing full-time student teaching. Students are invited to discuss the program with their major advisor in the Exercise Science Department.

Those who plan to teach on the secondary level should consult with the credential analyst in the Education Department and should become acquainted with the specific requirements for admission to and successful completion of the Teacher Education Program as outlined in the section entitled "Education" in this catalog.

Minor in Physical Education

A minimum of 30 hours (12 upper-division hours)

► **Required Courses (11 hours):**

ESTH 166	Career Development in Exercise Science	3
ESTH 170	Care and Prevention of Athletic Injuries	2
ESTH 470	Management in Exercise Science & Sport	3
ESTH 471	Research Methods in Sports	3

► **Required Electives (19 hours):**

(To be chosen in consultation with the major advisor)

Take at least 19 hours of ESTH courses, including at least 10 hours of Theory & Technique courses

**Exercise Science
Activity–Aerobic**

ESAC courses are repeatable for credit.

Proper attire is required for participation in activity classes. Additionally, certain classes require specialized equipment.

Activity classes meet for a minimum of 2 hours each week. Certain classes involve additional activity time.

Contact the Exercise Science Department for detailed information on the requirements for any particular activity course.

LOWER-DIVISION COURSES:

**ESAC 101A 1 F, W, S
Jogging**

For the beginning/intermediate jogger. Instructions pertaining to cardiovascular/muscular fitness, running style, running equipment, and personal running program development.

**ESAC 103A 1 F, W, S
Physical Fitness**

Introduction to fitness by means of cardiovascular development. Various fitness machines are used to inspire a commitment to cardiovascular fitness that will hopefully extend beyond the duration of this course.

**ESAC 105A 1 W, S
Fitness for Women**

For female students wanting to get started on an exercise program with some variety. Significant class time is dedicated to aerobic-type workouts. Also includes weight training, kickboxing and cardio moves to music.

**ESAC 107A 1 F, S
Swim and Stay Fit**

The use of swimming skills to enhance muscular and cardiovascular fitness. Focuses on acquisition of the skills and knowledge needed to maintain and enhance cardiovascular and muscular fitness. Proficiency in swimming strokes required.

**ESAC 109A 1 S
Hydro-Aerobics**

A low-medium impact conditioning and toning class. Shallow and deep water movements utilizing calisthenics and strengthening exercises are employed to learn how water exercises are a rehabilitation modality for injuries and a method for maintaining fitness.

**ESAC 133A 1 F
Mountain Biking**

Encompasses aspects pertaining to the elements of mountain bike riding. Topics covered include safety, riding techniques, bike maintenance, and physical conditioning.

UPPER-DIVISION COURSES:

**ESAC 304A 1 S
Cycling**

Aspects pertaining to the elements of road cycling. Includes safety, riding techniques, bike maintenance, and physical conditioning. This class is not for beginners and requires adequate physical conditioning. Road bike required. (A limited number of bikes are available for student use; please make inquiries to the professor.)

**ESAC 338A 1 F
Ultimate Frisbee**

This course is designed to teach the fundamental skills and rules of Ultimate Frisbee as well as how to play the game and how to implement basic strategies used in the game. Emphasis placed on skills, rules, and participation in playing the game of Ultimate Frisbee.

**Exercise Science
Activity**

ESAC courses are repeatable for credit.

Proper attire is required for participation in activity classes. Additionally, certain classes require specialized equipment.

Activity classes meet for a minimum of 2 hours each week. Certain classes involve additional activity time.

Contact the Exercise Science Department for detailed information on the requirements for any particular activity course.

LOWER-DIVISION COURSE:

**ESAC 100 1 Arranged
Adaptive Physical Education**

Designed to accommodate students with physical limitations. Cardiovascular endurance, muscular strength, muscular endurance, and flexibility are employed and adapted to fit the individual needs/abilities of the student. Requires physician's certification of need. Repeatable for credit.

**ESAC 120 1 W
Basketball**

Focuses on the fundamentals of basketball, such as, dribbling, passing, shooting, footwork, and defensive stance. Fundamental strategy for both offensive and defensive play also are covered.

Exercise Science

ESAC 123 **1 S** **Baseball- Men**

Introduces students to the basic concepts to enhance the skill levels of baseball activities. Proper techniques to fielding, base running, throwing, and hitting a baseball are introduced.

ESAC 124 **1 F** **Flag Football**

Introduces students to the basic skills of flag football, including throwing, catching, kicking, punting, and flag pulling. Also covers a basic knowledge of the rules and game strategies.

ESAC 128 **1 F, S** **Soccer**

Cover the basic elements in the game of soccer, including ball-handling skills, shot making, offensive/defensive alignments and game strategy. The rules, terminology, and history of the game also are included. Fall quarter enrollment limited to members of the men's varsity soccer team. Spring quarter enrollment is open to other students.

ESAC 130 **1 S** **Softball**

Introduces the basic skills of softball, including fielding, throwing, hitting, base running, and pitching. Students should have a glove and proper shoes to participate.

ESAC 132 **1 F, W** **Volleyball**

Designed to introduce students to the basic skills, rules, and strategies of the game of volleyball. Skills are demonstrated, practiced and then implemented in class games.

ESAC 158 **1 F** **Swimming**

Assists the non-swimmer as he or she explores the aquatic environment and develop the skills needed to enjoy time in and around the water. The class is intended for students with little or no swimming skills and who would likely not survive in deep water. Even years.

ESAC 160 **1 S** **Fencing**

Fundamental skills in fencing. Rules, terminology, and history of the game also are included.

ESAC 171 **1 W** **Pickleball**

Aspects of pickleball (i.e. ground strokes, serve, baseline volley, drop shot, drop volley, court coverage, and more). Rules, terminology, and history of the game also are included.

ESAC 174 **1 W** **Badminton**

Fundamental skills and rules in badminton, along with an introduction to the drop shot and smash and an emphasis on doubles and singles strategy. Conditioning is a part of every class.

ESAC 176 **1 F, W, S** **Weight Training**

An introductory course designed to help each student improve muscular strength, gain knowledge and understanding of weight training theory and practice, and develop a personalized weight training program.

ESAC 178 **1 S** **Canoeing**

Exposes students to the skills and experiences involved in the world of canoeing at the basic level. Includes time in both still and running water.

ESAC 180 **1 F** **Golf**

The basic rules and etiquette of golf. Also includes the basic fundamentals of the golf swing. Safety issues are discussed and golf strategy is introduced. Students must pay for range balls and green fees. For current rates, inquire at the Exercise Science Department.

ESAC 192 **1 W** **Skiing & Snowboarding**

Covers equipment, basic techniques, and safety rules for on-the-trail and off-the-trail safety. Conditioning and discussion about techniques is a major part of class activity. On-hill instruction is offered by Sierra at Tahoe Resort only. Additional fees apply. For current rates, inquire at the Exercise Science Department.

ESAC 194 **1 F, S** **Tennis**

Covers the most basic fundamentals in tennis: The basic stance, footwork, forehand/backhand strokes, volley and the serve. After an introduction to singles and doubles strategy and the rules of the game, there is a doubles tournament in class and two singles games played outside of class (at scheduled times).

UPPER-DIVISION COURSES:

ESAC 358 **1 F** **Intermediate Swimming**

Assists the swimmer as he or she improves swimming skills, including the crawl, breast stroke, back stroke, butterfly, and sidestroke. Also includes basic water safety and rescue skills. The class is intended for students who have already learned beginning-level swimming skills. Even years.

ESAC 368 **2 S**
Water Safety Instructor

Instructs students to become a teacher of the American Red Cross Learn to Swim Program. Prerequisite: Intermediate level proficiency in the crawl stroke, breast stroke, side stroke and butterfly; basic diving skills from the one meter springboard. Students must pass a skills pre-test before being allowed to continue in class. Recommended prerequisite: Red Cross Level 5. Even years.

ESAC 370 **2 S**
Lifeguard Training

Meets and exceeds the requirements of the American Red Cross for certification as a lifeguard. Prerequisite: Proficiency in the crawl stroke and breast stroke. Students must pass American Red Cross Skills Test before being allowed to continue in class. Recommended prerequisite: Red Cross Level 5.

ESAC 374 **1 W**
Intermediate Badminton

Reviews and enhances fundamental skills, with an emphasis on more technical skills (i.e. the flick serve, drop/push shots, and the 1/2 smash). Much of the time is spent in playing games, but drill work, conditioning, and self-evaluation testing is a part of the class as well.

ESAC 376 **1 W**
Intermediate Weight Training

Assists students in developing a weight training program that focuses on one of three areas: Body building, sport specific, and rehabilitation of an injury. After determining and executing the training program, the student selects his/her individual workout format based on the workout encyclopedia. Odd years.

ESAC 380 **1 S**
Intermediate Golf

Mechanics and techniques of the full golf swing, pitching, chipping, bunker play and putting. Skills improvement by playing rounds of golf. Also covers basic rules of golf and proper golf etiquette. Students must pass a basic golf skills test at the first day on the range in order to continue enrollment in the class. Additional fees apply. For current rates, inquire at the Exercise Science Department.

ESAC 392 **1 W**
Intermediate Skiing/Snowboarding

Covers equipment, basic techniques, and safety rules for on-the-trail and off-the-trail safety when skiing. Conditioning is a major part of class activity as well as discussion about techniques. Additional fees apply. For current rates, inquire at the Exercise Science Department.

ESAC 394 **1 S**
Intermediate Tennis

Designed for the intermediate-advanced player to improve skills, game strategies, and learn advanced techniques of tennis. Students must be able to hit consistent forehand and backhand ground strokes as well as serve in the proper court with some force at 50% accuracy.

Varsity Teams

ESAC courses are repeatable for credit.

LOWER-DIVISION COURSES:

ESAC 233V **1 F**
Volleyball- Varsity Women

Enrollment limited to members of the women's varsity volleyball team.

ESAC 235V **1 W**
Basketball- Varsity Women

Enrollment limited to members of the women's varsity basketball team.

ESAC 236V **1 W**
Basketball- Varsity Men

Enrollment limited to members of the men's varsity basketball team.

ESAC 237V **1 F**
Soccer- Varsity Men

Enrollment limited to members of the men's varsity soccer team.

ESAC 238V **1 F**
Cross Country- Varsity

Enrollment limited to members of the varsity cross country team.

Professional and Theory

LOWER-DIVISION COURSES:

ESTH 166 **3 W**
Career Development in Exercise Science

History of physical education, health, and recreation. Effects of social expectations and world events on views of physical education and sports. An introduction to careers in these and related fields.

ESTH 170 **2 W**
Care and Prevention of Athletic Injuries

Care and prevention of injuries associated with coaching and teaching sport and game activities in a school setting. Topics include sprains, bleeding, fractures, exposure to heat and cold, seizures, heart attacks, accidental exposure to poisons and chemicals, and other injuries requiring immediate medical attention.

Exercise Science

ESTH 183 **2 S**
Theory and Technique of Track and Field

Practice sessions and drills for developing fundamental skills and special abilities; study of rules and officiating techniques; consideration of practice scheduling and strategy. Odd years.

ESTH 260 **2 F**
Theory and Technique of Football

Practice in and theory of flag football. Development of fundamental skills of the game; analysis of skills, techniques, team strategy, and rules. Even years.

ESTH 261 **2 F**
Theory and Technique of Volleyball

Practice in and theory of volleyball. Development of fundamental skills of the game; analysis of skills, techniques, team strategy, and rules. Even years.

ESTH 262 **2 W**
Theory and Technique of Basketball

Analysis and practice of skills and team play; interpretation of rules; strategy and techniques of teaching. Even years.

ESTH 263 **2 S**
Theory and Technique of Softball

Practice in and theory of softball. Development of fundamental skills of the game; analysis of skills, techniques, team strategy, rules, and officiating procedures. Even years.

ESTH 264 **2 S**
Theory and Technique of Soccer

Practice and theory of soccer. Development of fundamental skills of the game; analysis of skills, techniques, team strategy, and rules. Even years.

ESTH 265 **2 F**
Theory and Technique of Aquatic Fitness

Emphasis on the theory of how to develop appropriate workout programs in the area of aquatics. Students learn choreography of water exercise programs in aquatic aerobics, swimming fitness, and adaptive water exercise. Students participate in individual fitness performance and develop programs for specific population demographics, specific ages, and those with special needs. Prerequisite: Intermediate-level proficiency in the crawl stroke and breast stroke. Odd years.

ESTH 271+272+273 **2+2+1 F+W+S**
Theory and Practice of Officiating I, II, III

Theory of and practice in officiating at team sports, interpretation of rules, officiating techniques, examinations, and ratings. Consists of a combination of lectures and practice. Prerequisite: Previous experience in playing football, volleyball, basketball, and softball.

ESTH 287 **2 S**
Theory and Technique of Individual Sports

Development of fundamental skills and strategies in various individual activities such as handball, golf, racquetball, and archery. Emphasis on teaching techniques, officiating, rules, and organization of materials for school programs. Additional fees apply. For current rates, inquire at the Exercise Science Department. Odd years.

UPPER-DIVISION COURSES:

ESTH 361 **2 W**
Coaching

Designed to develop skills for coaching athletic teams. Development of philosophies in harmony with Seventh-day Adventist principles concerning athletic events. Skills in team building and strategies. Practical experience included. Prerequisites: At least 3 of the following courses- ESTH 260, 261, 262, 263, 264. Even years.

ESTH 365 **3 S**
Outdoor Experience

Theory and practice in camping, hiking, backpacking, and canoeing techniques. Ecological considerations, equipment and food selection, outdoor cooking, and orienteering. One credit may apply to the Fitness general education requirement. Additional fees apply. For current rates, inquire at the Exercise Science Department.

ESTH 371 **4 W**
Biomechanics

A study of joints and muscular structure and their relation to physical exercise. Three lectures and one laboratory per week. Prerequisites: BIOL 101, 102.

ESTH 372 **4 F**
Physiology of Exercise

Physiological effects of muscular exercise, physical conditioning, and training. Significance of these effects for health and for performance in activity programs. Three lectures and one laboratory per week. Prerequisites: BIOL 101, 102.

ESTH 373 3 S

Introduction to Adapted Physical Activity

Common deviations of posture and feet; functional disturbances and crippling conditions found in school children. Survey of source material needed to plan and conduct individual, developmental, and special courses in physical education in schools. Prerequisites: ESTH 371 and two lower-division ESTH Theory and Technique courses (except ESTH 265). Odd years.

ESTH 374 4 W

Motor Learning

Physiological and psychological instructional considerations for learning, skill acquisition, and performance as applied to motor skills. Three lectures and one laboratory per week. Prerequisites: BIOL 101, 102, and two lower-division ESTH Theory and Technique courses.

ESTH 378 3 W

Fitness Assessment and Exercise Prescription

Introduction to the theoretical and practical aspects of exercise assessment, exercise interpretations, and exercise prescription. Covers principles of exercise prescription with hands-on experiences using various clinical and field methods to evaluate cardiorespiratory fitness, muscular strength and endurance, flexibility and body composition. Prerequisite: ESTH 372. Odd years.

ESTH 381 2 F

Theory and Technique of Racquet Sports

Analysis of and practice in strokes and tactics; rules, history and skill progression for various levels of instruction. Odd years.

ESTH 383 3 S

Theory and Technique of Weight Training and Developmental Physical Education

An analysis of the physiological and biomechanical application of resistant training, cross training and sports nutrition for athletes participating in team and individual sports. Principles of program design, supervision, and technique assessment for pre-season, season, and post season development. Prerequisite: ESTH 371. Even years.

ESTH 384 2 W

Theory and Technique of Rhythmic Activities

Development of personal and teaching skills for theoretical and practical application of rhythms: The leadership of aerobic exercise, dramatic and creative play, folk rounds, and other activities. Development of skills for personal combative activities and techniques for teaching such skills. Odd years.

ESTH 450 3 W

Foundations of Sports Psychology

Psychological theories and research related to sport and exercise behavior. Introduction to the field of sport and exercise psychology by providing a broad overview of the major topics in the area.

ESTH 470 3 F

Management in Exercise Science & Sport

Relationship of physical education to modern education theory. The organization of physical education activities, organization and classification of pupils; emphasis on the arrangement and construction of equipment and planning of school programs suitable to denominational schools. Odd years.

ESTH 471 3 W

Research Methods in Sports

Scientific testing in physical education: Analysis and study of tests, diagnosis of physical efficiency, and physiological reactions to exercise. Evaluation of programs and student achievement through measurement technique. Odd years.

ESTH 476 3 F

Physical Education for Children

Activity interests of children and appropriate materials for different age levels; selection of materials and methods of presentation. Consists of a combination of lectures and practice. Applies as one course for the Fitness general education requirement.

ESTH 490 2 W

Ethics in Sports and Exercise

The power of religion in developing Christian professionals in health, physical education, and recreation. Concepts of the way God, man, and Spirit relate to one another; development of Christlike leadership qualities in both instructors and students. Even years.

ESTH 492 3 S

Practicum in Sports Science

Combines classroom work with practical hands-on experience to prepare students to continue their education in the fields of athletic training, personal training, sports physical therapy, or sports medicine. Skills developed in the program are taken from the following areas: Anatomy and physiology, athletic injury care, prevention and rehabilitation, physical therapy, fitness programs for individuals and groups, health and wellness, nutrition, and strength training. Should be taken during the student's last year at Pacific Union College before graduation.

Exercise Science

ESTH 495 **1-3 Arranged** **Independent Study**

Open by permission of the department chair to advanced students with adequate background and experience. Repeatable to a maximum of 3 credits.

HLED 495 **1-3 Arranged** **Independent Study**

Open by permission of the department chair to advanced students with adequate background and experience. Repeatable to a maximum of 3 credits.

Health Education

LOWER-DIVISION COURSES:

HLED 162 **2 W, S** **Fitness for Life**

Introduces the philosophy of health, aimed at lasting nutritional and physical conditioning that promotes a high level of well-being. Emphasis on the prevention of heart disease, obesity, and stress. Laboratory evaluation in body composition, blood analysis, stress testing, and the treadmill.

HLED 166 **2 F, W** **Health Education**

Encourages the development of self-awareness and promotes “wellness” as a life-long personal investment. Advocates protection and effective use of human and ecological resources and acquiring skills for individual responsibility. Emphasis on Seventh-day Adventist health principles. Treats substance abuse and nutrition as required for Seventh-day Adventist and California teaching credentials.

HLED 169 **2 Arranged** **Current Health Concerns**

Explores the background and cause of common health problems of the adult as well as prevention and treatment. Designed to promote physical vitality and a sense of well-being.