Exercise Science Handbook (2015-2016)

THE EXERCISE SCIENCE MAJOR

The King's College Exercise Science major provides students with an understanding of the physiological, biomechanical, and psychological effects of exercise on the human body. This unique and challenging program is designed to prepare students for a wide range of careers in the fast-growing fields of health, wellness, and fitness. The Exercise Science major at King's College provides students with a foundation of both theoretical and clinical knowledge while adhering to the King's mission to "…provide a broad-based liberal arts education that offers intellectual, moral, and spiritual preparation that enables students to lead meaningful and satisfying lives."

Specifically, King's College offers two tracks within the major of Exercise Science: The Applied Exercise Science Track and the Exercise Physiology Track. Both these tracks will prepare students to enter the field of Exercise Science directly. However, the two tracks differ in terms of their preparation of students for varying post-graduate degree programs. Please refer to specific description of the two tracks for more information.

Degree offered

Bachelor of Science (B.S.) in Exercise Science

Admission

For students interested in pursuing a degree in Exercise Science at King's College applications for admission may be obtained by contacting the Office of Admission at King's College. Applications are also available online at www.kings.edu.

Graduation Requirements

1. Completion of all courses in the Exercise Science curriculum
2. A minimum grade of "C-" in all Exercise Science or related courses (sciences, math, psychology, and education)
3. A minimum cumulative grade point average of 2.50.
4. A minimum cumulative Exercise Science major grade point average of 2.50.
5. Current CPR/AED certification.
6. Successful completion of all required internship credits

Program Director

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CORE CLASS REQUIREMENTS FOR EXERCISE SCIENCE

CORE 100	Liberal Arts Seminar (3)
CORE 110	Effective Writing (3)
CORE 115	Effective Oral Communications (3)
MATH 126	Introduction to Statistics (3)
CORE 131 OR 133	Civilizations: Historical Perspectives (3)
CORE 140 OR 141-146	Foreign Languages and Cultures (3)
CORE 157	Introduction of Sociology (3)
CORE 160-169	Literature (3)
CORE 171-179	The Arts (3)
CORE 180 OR 190	Social Science in an American Context (3) OR Social Sciences in a Global Context (3)
CORE 181-189 OR 191-199	American Studies (3) OR Contemporary Global Studies (3)
CORE 250-259	Systematic Theology (3)
CORE 260-269	Moral Theology (3)
CORE 280	Introduction to Philosophy (3)
CORE 281-289	Philosophy (3)

APPLIED EXERCISE SCIENCE TRACK

Description

This track will prepare students to either enter the field of exercise science directly or help prepare them for exercise science or occupational therapy graduate programs. Students will take a substantial amount of applied exercise science classes and perform an internship. During the senior year, students will also take applied research classes and develop and original research project. Additionally, students have room for four elective courses in their Junior and Senior year.

Careers

A student graduating from this exercise science program with a concentration in Applied Exercise Science could work in areas such as health promotion, fitness development, colleges and universities, clinical and hospital rehabilitation, and sport and athletic programs.

Examples of specific careers immediately available upon graduation:

- Small business owners and entrepreneurs in the exercise science industry
- Sports and wellness program instructors and directors
- Researchers in companies that make physiological equipment for testing and evaluation
- Managers and exercise leaders in corporate wellness programs
- Instructors in health and fitness clubs
- Supervisors of specialized health, fitness, wellness, or lifestyle programs in correctional services, police, fire, and emergency response organizations
- Fitness instructors in YMCAs, spas and resort centers
- Fitness directors and managers in the military
- Exercise technologists in cardiology suites
- Fitness instructors and supervisors at the state, regional, and national levels in sports and athletic programs
- Sports consultants in areas of psychology and training, biomechanics, efficiency and metabolism, and nutrition
- Electrophysiology technologists in hospital settings

Examples of careers requiring post-graduate education:

- Educators/Researchers at institutions of higher learning in Exercise Physiology, Exercise Psychology, Public Health.
- Occupational Therapists in hospitals, in-patient/out-patient/in-home rehabilitation settings
- Cardio-pulmonary rehabilitation specialists
- Strength coaches for college, university and professional sports programs
- Exercise and/or Sport Psychologists

Major Requirements

26 courses – 64 credits

BIOL 219	Anatomy & Physiology I (3)
BIOL 219L	Anatomy & Physiology I Lab (1)
BIOL 220	Anatomy & Physiology II (3)
BIOL 220L	Anatomy & Physiology II Lab (1)
CHEM 107	General, Organic, and Biochem. (3)
CHEM 107L	General, Org., and Biochem. Lab (1)
PHYS 108	Applied Biophysics (3)
PHYS 108L	Applied Biophysics Lab (1)
EXSC 101	Introduction to Exercise Science (3)
EXSC 150	Prev., Treatment & Em. Care (3)
EXSC 245	Principles of Health (3)
EXSC 280	Kinesiology (3)
EXSC 290	Exercise Physiology (3)
EXSC 300	Science of Strength & Conditioning (3)
EXSC 300L	Science of Strength & Cond. Lab (1)
EXSC 309	Electrocardiology (3)
EXSC 310	Assessment & Measurements in Ex. (3)
EXSC 310L	Assessment & Measurements in Ex. Lab(1)
EXSC 320	Exercise and Special Populations (3)
EXSC 325	Nutrition and the Athlete (3)
EXSC 430	Program Devel. & Prescr. in Ex. and Fitness (3)
EXSC 440	Admin. & Org. for Exercise Facilities (3)
EXSC 480	Research & Design I (2)
EXSC 481	Research & Design II (2)
EXSC 499	Field Experience/Internship (3)
PSYC 340	Health Psychology (3)

Suggested Curriculum Sequence

First Year					
Fall			**Spring**		
EXSC 101	Introduction to Exercise Science	3	EXSC 150	Prev., Treat., & E. Care of Injuries	3
PHYS 108	Applied Biophysics	3	CHEM 107	General, Organic, and Biochemistry	3
PHYS 108L	Applied Biophysics Lab	1	CHEM 107L	General, Organic, and Biochem. Lab	1
CORE 090	First Year Experience	1	CORE		3
CORE		3	CORE		3
CORE		3	CORE		3
CORE		3			
		17			**16**
Second Year					
Fall			**Spring**		
EXSC 280	Kinesiology	3	EXSC 245	Principles of Health	3
BIOL 219	Anatomy & Physiology I	3	EXSC 290	Exercise Physiology	3
BIOL 219L	Anatomy & Physiology I Lab	1	BIOL 220	Anatomy & Physiology II	3
CORE		3	BIOL 220L	Anatomy & Physiology II Lab	1
CORE		3	MATH 126	Introduction to Statistics	3
CORE		3	CORE		3
		16			**16**
Third Year					
Fall			**Spring**		
EXSC 300	Science of S&C	3	EXSC 310	Assessment & Meas. in Ex.	3
EXSC 300L	Science of S&C Lab	1	EXSC 310	Assessment & Meas. in Ex. Lab	1
EXSC 309	Electrocardiology	3	EXSC 320	Exercise and Special Populations	3
CORE		3	EXSC 325	Nutrition and the Athlete	3
Elective		3	PSYC 340	Health Psychology	3
			Elective		3
		13			**16**
Fourth Year					
Fall			**Spring**		
EXSC 430	Program Develop. & Prescr.	3	EXSC 481	Research & Design II	2
EXSC 440	Admin. & Org. for Exercise Fac.	3	EXSC 499	Field Experience/Internship	3
EXSC 480	Research & Design I	2	CORE		3
CORE		3	CORE		3
Elective		3	Elective		3
		14			**14**

TOTAL CREDITS: 122

*If students intent to go on to Occupational Therapy graduate school, it is recommended that the following classes are taken as electives:
Fall Junior Year: PSYC 351 - Psychopathology
Spring Junior Year: PSYC 355 – Developmental Psychology: Childhood and Adolescence
Fall Senior Year: PSYC 356 – Developmental Psychology: Adulthood & Aging
Spring Senior Year: PSYC 345 – Biology of Mental Illness

EXERCISE PHYSIOLOGY TRACK

Description

This track will prepare students to either enter the field of exercise science directly or help prepare them for physical therapy, biomechanics, or similar allied health graduate programs. Elective courses, Principles of Health (EXSC 245), and Administration & Organization of Exercise Facilities (EXSC 440) are replaced by general biology, physics, and chemistry courses with labs, as well as an additional psychology class.

Careers

The Exercise Physiology track is specifically designed to prepare students for graduate programs in Physical Therapy or Biomechanics. Course requirements will satisfy most pre-requisite classes required for application to these programs. Since these course requirements are mostly science-based classes, minimal additional course work (besides the required course in the Exercise Physiology curriculum) would qualify students for application to other allied health professions such as Physician Assistant Studies, Medical School, Dental School, Veterinary School etc.

Examples of specific careers immediately available upon graduation:

- Small business owners and entrepreneurs in the exercise science industry
- Sports and wellness program instructors and directors
- Researchers in companies that make physiological equipment for testing and evaluation
- Managers and exercise leaders in corporate wellness programs
- Instructors in health and fitness clubs
- Supervisors of specialized health, fitness, wellness, or lifestyle programs in correctional services, police, fire, and emergency response organizations
- Fitness instructors in YMCAs, spas and resort centers
- Fitness directors and managers in the military
- Exercise technologists in cardiology suites
- Fitness instructors and supervisors at the state, regional, and national levels in sports and athletic programs
- Sports consultants in areas of psychology and training, biomechanics, efficiency and metabolism, and nutrition
- Electrophysiology technologists in hospital settings

Examples of careers requiring post-graduate education:

- Educators/Researchers at institutions of higher learning in Exercise Physiology, Exercise Psychology, Biomechanics, Physiology, Biomedical Science, Public Health.
- Physical Therapists in hospitals, in-patient/out-patient/in-home rehabilitation settings
- Cardio-pulmonary rehabilitation specialists
- Strength coaches for college, university and professional sports programs
- Exercise and/or Sport Psychologists
- Physician Assistants*
- Physicians*
- Chiropractors*
- Veterinarians*
- Pharmacists*

*additional coursework in organic chemistry, biochemistry, and/or microbiology may be required depending on the specific graduate program

Major Requirements

33 courses – 77 credits

BIOL 219	Anatomy & Physiology I (3)
BIOL 219L	Anatomy & Physiology I Lab (1)
BIOL 220	Anatomy & Physiology II (3)
BIOL 220L	Anatomy & Physiology II Lab (1)
BIOL 113	Evolution and Diversity (3)
BIOL 113L	Evolution and Diversity Lab (1)
BIOL 210	Organisms and Their Ecosystems (3)
BIOL 210L	Organisms and Their Ecos. Lab (1)
CHEM 113	General Chemistry I (3)
CHEM 113L	General Chemistry I Lab (1)
CHEM 114	General Chemistry II (3)
CHEM 114L	General Chemistry II Lab (1)
PHYS 111	Physics for the Life Sciences I (3)
PHYS 111L	Physics for the Life Sci. I Lab (1)
PHYS 112	Physics for the Life Sciences II (3)
PHYS 112L	Physics for the Life Sci. II Lab (1)
EXSC 101	Introduction to Exercise Science (3)
EXSC 150	Prev., Treatment & Em. Care (3)
EXSC 280	Kinesiology (3)
EXSC 290	Exercise Physiology (3)
EXSC 300	Science of Strength & Conditioning (3)
EXSC 300L	Science of Strength & Cond. Lab (1)
EXSC 309	Electrocardiology (3)
EXSC 310	Assessment & Measurements in Ex. (3)
EXSC 310L	Assessment & Measurements in Ex. Lab(1)
EXSC 320	Exercise and Special Populations (3)
EXSC 325	Nutrition and the Athlete (3)
EXSC 430	Program Devel. & Prescr. in Ex. and Fitness (3)
EXSC 480	Research & Design I (2)
EXSC 481	Research & Design II (2)
EXSC 499	Field Experience/Internship (3)
PSYC 340	Health Psychology (3)
PSYC 351	Psychopathology (3)

Suggested Curriculum Sequence

First Year					
Fall			**Spring**		
EXSC 101	Introduction to Exercise Science	3	EXSC 150	Prev., Treat., & E. Care of Injuries	3
CHEM 113	General Chemistry I	3	CHEM 114	General Chemistry II	3
CHEM 113L	General Chemistry I Lab	1	CHEM 114L	General Chemistry II Lab	1
CORE 090	First Year Experience	1	CORE		3
CORE		3	CORE		3
CORE		3	CORE		3
CORE		3			
		17			**16**
Second Year					
Fall			**Spring**		
EXSC 280	Kinesiology	3	EXSC 290	Exercise Physiology	3
BIOL 219	Anatomy & Physiology I	3	BIOL 220	Anatomy & Physiology II	3
BIOL 219L	Anatomy & Physiology I Lab	1	BIOL 220L	Anatomy & Physiology II Lab	1
PHYS 111	Physics for the Life Sciences I	3	PHYS 112	Physics for the Life Sciences II	3
PHYS 111L	Physics for the Life Sciences I Lab	1	PHYS 112L	Physics for the Life Sciences II Lab	1
CORE		3	MATH 126	Introduction to Statistics	3
		14			**14**
Third Year					
Fall			**Spring**		
EXSC 300	Science of S&C	3	EXSC 310	Assessment & Meas. in Ex.	3
EXSC 300L	Science of S&C Lab	1	EXSC 310	Assessment & Meas. in Ex. Lab	1
EXSC 309	Electrocardiology	3	EXSC 320	Exercise and Special Populations	3
BIOL 113	Evolution & Diversity	3	EXSC 325	Nutrition and the Athlete	3
BIOL 113L	Evolution & Diversity Lab	1	BIOL 210	Organisms & Their Ecosystems	3
CORE		3	BIOL 210L	Organisms & Their Ecosystems Lab	1
CORE		3	PSYC 340	Health Psychology	3
		17			**17**
Fourth Year					
Fall			**Spring**		
EXSC 430	Program Develop. & Prescr.	3	EXSC 481	Research & Design II	2
EXSC 480	Research & Design I	2	EXSC 499	Field Experience/Internship	3
PSYCH 351	Psychopathology	3	CORE		3
CORE		3	CORE		3
CORE		3	CORE		3
		14			**14**

TOTAL CREDITS: 123

EXERCISE SCIENCE COURSE DESCRIPTIONS

EXSC 101: Introduction to Exercise Science (3)
This course introduces students to the exercise science discipline. Students will examine concepts including professionalism, ethics, certification and licensure, employment opportunities and scientific foundations of the various sub-disciplines. Basic foundations of exercise science will be emphasized.

EXSC 150: Prevention, Treatment, and Emergency Care of Injuries (3)
This course will introduce students to emergency and immediate care of injuries. The course will also provide an introduction to the mechanisms of injury, signs and symptoms, and management procedures for common sport/activity-related injuries. Medical emergencies, physical trauma, various disease pathologies, bleeding, respiratory and cardiac emergencies, and transportation of the injured will be explored. The student will also learn emergency bandaging for open wounds, splinting for fractures and sprains, crutch fitting, and the use of a stethoscope and sphygmomanometer in a practical setting. Upon completion of the course, students will be certified in American Red Cross First Aid and CPR/AED for Professional Rescuers and Health Care Providers.

EXSC 245: Principles of Health (3)
The student will be introduced to techniques and principles to improve an individual's mental and physical health. Human sexuality and personal relations will be explored. The effects of legal and illegal drugs on the body will be examined. Systemic and acquired diseases and their effects on the human body will be investigated. The final areas of emphasis for this course will be to study the effects of aging, dying, and the various types of medical services available to the consumer.
Cross listed as AT 245

EXSC 280: Kinesiology (3)
The student will primarily be exposed to functional human anatomy focusing on skeletal muscle origin, insertion, action, and nerve supply. In addition, the student will develop an understanding and appreciation of fundamental principles that relate to human movement and, in particular, an understanding of those principles that apply to efficient, skilled, and safe movement. The student will develop the ability to functionally and mechanically analyze typical and irregular or potentially harmful movements in terms of principles derived primarily from anatomy, physiology and biomechanical physics.
Cross listed as AT 280

EXSC 290: Exercise Physiology (3)
Presents the student with a comprehensive study of the human body's responses to exercise. Topics include respiratory response to exercise, principles of training and conditioning and the resulting adaptations of the human body, cardiovascular training principles, energy production, metabolism, body composition, and muscular adaptations to exercise. The student will have the opportunity to apply these principles in a practical setting through laboratory activities. *Cross listed as AT 290*

EXSC 300/300L: Science of Strength & Conditioning/Lab (3)/(1)
Students will learn to develop programs of exercise and activity and techniques for individual assessment of client status, needs, and goals. Students will learn to design programs that enable clients to determine realistic goals for development and the use of activity throughout life. Students will be introduced to the various aerobic fitness activities for adult populations. Techniques of fitness assessment, aerobic dance, jogging, and aquatics activities will be emphasized. Various strength training programs techniques and trends will be examined. Students will have the opportunity to set up and become involved in various strength training methods.

EXSC 309: Electrocardiology (3)
This course is designed to provide students with the basic knowledge of the structure and function of the heart and circulatory system. Students will understand the electrical and mechanical events of the cardiac cycle, as well as develop an understanding heart and circulatory diseases and conditions. Additionally, students will set-up, electrocardiograph (ECG) monitoring systems and record and interpret ECG data through administration of 3- and 12-lead ECGs both during rest and exercise. Finally, students will interpret normal and abnormal heart rhythms and artifacts during rest and exercise.

EXSC 310/310L: Assessment & Measurements in Exercise/Lab(3)/(1)
This course presents practical and theoretical knowledge about the various modes and protocols used in graded exercise testing, basic electrocardiography and exercise prescription based on testing results. Laboratory sessions provide opportunities for students to gain practical experience in performing various physiological testing procedures as well as various methods of fitness testing. The course focuses on developing expertise in preparation of clients for fitness testing, utilization of various modes of exercise testing and test interpretation.
Pre-requisite - EXSC 150 and EXSC 309.

EXSC 320: Exercise and Special Populations (3)
This course provides an in-depth study of changes that occur due to acute exercise, chronic exercise, and aging. Students will examine the physiologic differences among individuals with various medical conditions. Behavioral modification and counseling skills for various populations are also developed.

EXSC 325: Nutrition and the Athlete (3)
The student will understand the relationship between physical fitness, physical performance, injury prevention, and nutritional intake. The student will develop an understanding of how to improve physical performance through proper utilization of food, how to identify improper eating habits, the effects of food supplements, techniques and effectiveness of carbohydrate loading, and the construction of a pre-event meal.
Cross listed as AT 325

EXSC 430: Program Development & Prescription in Exercise and Fitness (3)
This course examines strength training techniques and program design. Emphasis is placed on proper form and utilization of various workout designs to complement larger training goals. Students will gain experience in the theoretical and practical aspects of designing individual workout sessions, periodization and programming to enhance progression.
Pre-requisite - EXSC 310/310L.

EXSC 440: Administration & Organization for Exercise Facilities (3)
The student will gain an understanding of policies and procedures in the operation of an exercise/testing facility. Students will study position statements that describe various aspects of industry standards, appropriate staff to client ratios, budgeting, management strategies of staff and organizational requirements of operating various exercise/fitness facilities. Students will learn appropriate evaluation and care of equipment for exercise and testing and appropriate record keeping and budgeting for facilities. Students will study legal considerations of all aspects of exercise and fitness facilities.

EXSC 480: Research & Design I (2)
This course is designed to help students understand, evaluate and conduct exercise science research. Students will examine the basic concepts and procedures for conducting research, acquire skills necessary for interpreting research, and develop an understanding of how to apply research findings.

EXSC 481: Research & Design II (2)
Students will develop and carry-out an original research project on a topic related to exercise science. This process will involve a formal proposal and defense presentation in addition to collection and interpretation of their data.
Pre-requisite - EXSC 480.

EXSC 499: Field Experience/Internship (3)
Internship experience designed to provide students with an opportunity to gain real-world experience inexercise science settings while completing all of the assignments found in the Exercise Science Program internship handbook.
Pre-requisite - Successful completion of all 300-level exercise science courses.

FREQUENTLY ASKED QUESTIONS

What is exercise science?

Exercise science deals with the study of both the immediate and long term effects of physical activity focusing on the "how" and "why" the body responds to physical activity. Exercise Science encompasses a wide variety of disciplines including, but not limited to: Biomechanics, Sports Nutrition, Sport Psychology, Motor Control/Development, and Exercise Physiology. The study of these disciplines is integrated into the academic preparation of Exercise Science professionals. Exercise Science professionals work in the health and fitness industry, and are skilled in evaluating health behaviors and risk factors, conducting fitness assessments, writing appropriate exercise prescriptions, and motivating individuals to modify negative health habits and maintain positive lifestyle behaviors for health promotion. They conduct these activities in university, corporate, commercial or community settings where their clients participate in health promotion and fitness-related activities. (Source - CAAHEP)

How is exercise science different than athletic training/physician assistant studies?

Exercise Science is a science-based degree that prepares you to work in many different types of health, fitness and medical fields. Athletic training/physician assistant studies prepare individuals to function in very specific professional roles within the allied healthcare field.

Why study exercise science at King's College?

King's college has a long track record of producing graduates that go on to meaningful careers that cultivate and enrich lives of others.

If you are interested in attaining the knowledge, skills, and abilities to succeed as a health, exercise, and fitness professional, and are committed to assisting others in improving their health and physical fitness by increasing their participation in safe and effective exercise.

Are there other requirements?
Yes. You must acquire certification in Cardiopulmonary Resuscitation (CPR), Automated External Defibrillator (AED) for the entirety of the academic program. This certification will be earned in the spring semester of the freshmen year.

What is a national certification? Does the EXSC curriculum prepare me for it?
Most employers expect Exercise Science professionals to have earned professional certification from a nationally recognized organization. Such organizations are:

National Strength and Conditioning Association

- Certified Strength and Conditioning Specialist (NSCA - CSCS)
- Certified Special Population Specialist (NSCA - CSPS)
- Certified Personal Trainer (NSCA-CPT)
- Tactical Strength and Conditioning – Facilitator (TSAC-F)

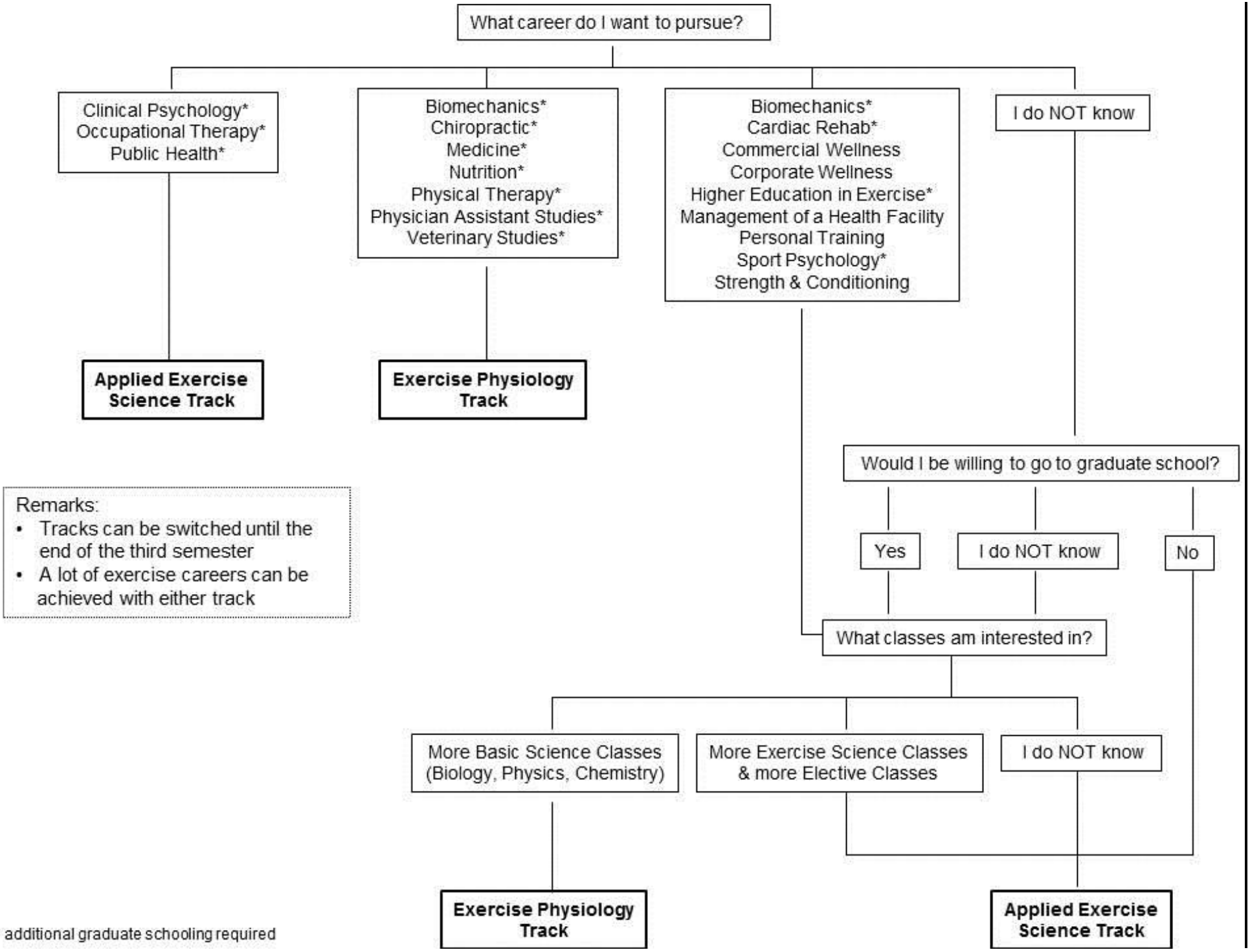
American College of Sports Medicine

- Certified Personal Trainer (ACSM-CPT)
- Certified Group Exercise Instructor (ACSM-GEI)
- Certified Exercise Physiologist (ACSM-EP-C)
- Certified Clinical Exercise Physiologist (ACSM-CEP)
- Registered Clinical Exercise Physiologist (RCEP) [requires Master's degree]

National Academy of Sports Medicine

- Certified Personal Trainer (CPT)
- Corrective Exercise Specialist (CES)
- Performance Enhancement Specialist (PES)
- Fitness Nutrition Specialist (FNS)
- Sports Nutrition Specialist (SNS)
- Group Personal Training Specialist (GPTS)
- Mixed Martial Arts Conditioning Specialist (MMACS)
- Weight Loss Specialist (WLS)
- Women's Fitness Specialist (WFS)
- Senior Fitness Specialist (SFS)
- Youth Exercise Specialist (YES)
- Golf Fitness Specialist (GFS)

Students may be prepared to sit for various certification exams at the conclusion of the Exercise Science curriculum. More information will be presented during actual course work.


What career do I want to pursue?
Clinical Psychology*
Occupational Therapy*
Public Health*
Biomechanics*
Chiropractic*
Medicine*
Nutrition*
Physical Therapy*
Physician Assistant Studies*
Veterinary Studies*
Biomechanics*
Cardiac Rehab*
Commercial Wellness
Corporate Wellness
Higher Education in Exercise*
Management of a Health Facility
Personal Training
Sport Psychology*
Strength & Conditioning
I do NOT know
Applied Exercise Science Track
Exercise Physiology Track
Would I be willing to go to graduate school?
Yes
I do NOT know
No
What classes am interested in?
More Basic Science Classes (Biology, Physics, Chemistry)
More Exercise Science Classes & more Elective Classes
I do NOT know
Exercise Physiology Track
Applied Exercise Science Track
Remarks:
• Tracks can be switched until the end of the third semester
• A lot of exercise careers can be achieved with either track
* additional graduate schooling required