

HPW 455: Scientific Principles of Strength, Conditioning & Exercise Technique

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Required Text and Material:

NSCA, Essentials of Strength and Conditioning 4th Edition

NSCA The Basics of Strength & Conditioning Manual (PDF)

Lecture: Two days/week, 50 minutes

Lab: One Day/week, 50 minutes

Credits: 3

Course Description: Students will begin in the classroom. A review of anatomy and physiology (muscular, neuromuscular, bone and connective tissue, cardiopulmonary); biomechanics; bioenergetics and metabolism, neuroendocrine physiology; physiological adaptations; anatomical, physiological and biomechanical differences of athletes; psychological techniques. Bi-weekly the class will be conducted in the Champions Hall Fitness Center, providing a coaching and teaching model for foundational exercises used in strength and conditioning. The utility and application of exercise progression from novice to complex movements, basic biomechanical concepts and teaching methods. Students will coach their classmates through movements identifying correct technique and progressions through coaching cues and constructive feedback. Students will research certifications through National Strength and Conditioning Association (NSCA), National Academy of Sports Medicine (NASM), and/or American College of Sport Medicine (ACSM). The course will prepare you to sit for Certified Strength and Conditioning Specialist, CSCS, Examination.

Schedule & Competencies:

Week/Day	Lecture & Lab Schedule	Readings/Location
Week 1: Day1	Welcome, Needs Analysis, Certification Reviews	NSCA Certification Handbook Lecture Room
D2	Structure and Function of Body Systems/Biomechanics Resistance Training	Lecture Room/Finished Ch. 1 Start Ch. 2
D3	Chapter 2 Lecture	Quiz/Chapter Tests
Week 2: Day 1	Bioenergetics of Exercise and Training Lecture	Finished Ch.3 Room
D2	Endocrine Responses to Resistance Exercise	Finished Ch. 4 Room
D3	Chapter 3 & 4 Review Lecture	Quiz/Chapter Tests
Week 3: Day 1	Adaptations to Anaerobic Training Programs	Lecture Room/Finished Ch. 5 Start Ch. 6
D2	Adaptations to Aerobic Endurance Training Programs	Lecture Room/Finished Ch.6
D3	Chapter 5 & 6 Review Lecture	Online. Quiz/Chapter Tests
Week 4: Day 1	Age- and Sex-Related Differences and Their Implications for Resistance Exercise	Lecture Room/Finished Ch. 7
D2	Psychology of Athletic Preparation and Performance	Lecture Room/Finished Ch. 8
D3	Chapter 7 & 8 Review Lecture	Online. Quiz/Chapter Tests

Week 5: Day 1	Basic Nutrition Factors in Health	Finished Ch. 9
D2	Nutrition Strategies for Maximizing Performance	Finished Ch. 10
D3	Performance-Enhancing Substances and Methods /Lecture	Finished Ch. 11 Quiz/Chapter Tests 9-11
Week 6: Day 1	Principles of Test Selection and Administration	Lecture Room/Finished Ch.12
D2	Administration, Scoring, and Interpretation of Selected Tests	Lecture Room/Finished Ch. 13
D3	Lab Testing & Administration	Online. Quiz/Chapter Tests
Week 7: Day 1	Warm-Up and Flexibility Training	Lecture Room/Finished Ch. 14
D2	Exercise Technique for Free-Weight and Machine Training	Lecture Room/Finished Ch. 15
D3	Lab Dynamic Warm up, PNF stretching	Online. Quiz/Chapter Tests
Week 8: Day 1	Exercise Technique for Alternative Modes and Nontraditional Implement Training	Lecture Room/Finished Ch.16
D2	Basics of Strength Training Manual & Foundations of Coaching Lifts	Lecture Room/Finished Ch.16
D3	Review of Manual & Foundations	Online. Quiz/Chapter Test 16
Week 9: Day 1	Program Design for Resistance Training	Lecture Room/Finished Ch.17
	Program Design and Technique for Plyometric Training	Lecture Room/Finished Ch.18
D3	Lab: Strength & Power Exercises	Online. Quiz/Chapter Tests
Week 10: Day 1	Program Design and Technique for Speed and Agility Training	Lecture Room/Finished Ch.19
	Program Design and Technique for Aerobic Endurance Training	Lecture Room/Finished Ch.20
D3	Lab: Speed & Agility Drills/Technique	MAC
Week 11: Day 1	Periodization	Lecture Room/Finished Ch.21
D2	Periodization	Lecture Room/Finished Ch.21
D3	Lab: Annual Training Plan	
Week 12: Day 1	Rehabilitation and Reconditioning	Lecture Room/Finished Ch.22
D2	Rehabilitation and Reconditioning	Lecture Room/Finished Ch.22
D3	Lab: Athletic Training	UWSP AT
Week 13: Day 1	Facility Design, Layout, and Organization	Ch. 23-24
D2	Facility Policies, Procedures, and Legal Issues	
D3	Lab: Management of Athletic Facility	
Week 14: Day 1	Coaching Classmates – Demo Drills	MCCHFC
D2	Coaching Classmates – Demo Drills	MCCHFC
D3	Coaching Classmates – Demo Drills	MCCHFC
Week 15: Day 1	Semester Review	NSCA Certification Handbook
D2	Exam Prep: Scientific Foundations	
D3	Exam Prep: Practical/Applied	
Finals Week	Scientific Foundations Test & Practical/Applied	CSCS Practice Exam

Practical/Applied: Basics of Strength Training and Foundations of Coaching Lifts

Marshfield Clinic Champions Hall Fitness Center and Multi Activity Center

Competencies:

- Understand the anatomical, physiological, and safety concepts and terms related to the squat, bench press, push press, deadlift, power clean, power snatch, accessory lifts and movements in the Basics of Strength and Conditioning Manual and Foundations of Coaching Lifts

- Plyometric, Speed and Agility Drills
- Understand the utility and application of these movements
- Instruct lifters in proper exercise technique and use of progressions
- Identify technique errors in the performance of the movements
- Use and learn coaching cues to improve lifters' performance of the movements

Letter Grade Assignment:

Letter Grade	Percentage
A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	60-66%
F	0-59%