

**University of Southern California – Department of Biological Sciences**  
**Human Biology 250 – The Pharmacology of Performance Enhancing Drugs (4 units)**  
**Fall 2018**

**Instructor:** Kurt E. Kwast, Ph.D.  
**Office Hours:** Monday 12:00 pm - 1:30 pm & Wednesday 12:30 pm – 2:00 pm (AHF B39)  
**Email:** [kwast@usc.edu](mailto:kwast@usc.edu)

**Lecture:** MWF 11:00 - 11:50 am; THH 212

**Course Description:**

The science of drugs, nutritional supplements, and ergogenic aids that are purported to enhance human athletic performance and ethical issues surrounding them.

**Learning Objectives:**

1. To develop a broad comprehension of the principles of pharmacology and pharmacokinetics.
2. To place performance enhancement in sports into a physiological, sociological, and evolutionary context.
3. To promote critical thinking by using the application of knowledge in pharmacology to solve both real-world and conceptual problems in sports physiology and performance enhancement.

**I. Texts:**

**REQUIRED:** Drugs in Sport, 7<sup>th</sup> edition, edited by David Mottram & Neil Chester, Routledge Press, London, 2018.

**Optional:** Run, Swim, Throw, Cheat: The Science Behind Drugs in Sport. Cooper, C. Oxford University Press, Oxford, UK, 2012.

**II. Grading Outline:**

20%	Exam 1	200 pts.
20%	Exam 2	200 pts.
20%	Exam 3	200 pts.
30%	Final Exam	300 pts.
10%	Quizzes/Participation	100 pts.
	<b>Total =</b>	<b>1000 pts.</b>
2.5%	JEP Extra Credit	+25 pts.

- Individual exams and quizzes will be scored but not assigned a letter grade. Only the final point tally will be assigned a letter grade. The grading scale will be based on a traditional grading scale as follows:

Letter Grade	Point Ranges	Grade Point Value
A	930-1000	4.000
A-	900-929	3.667
B+	870-899	3.333
B	830-869	3.000
B-	800-829	2.667
C+	770-799	2.333
C	730-769	2.000
C-	700-729	1.667
D+	670-699	1.333
D	630-669	1.000
D-	600-629	0.667
F	<600	0.000

- A request to take a make-up exam must be accompanied by evidence of a university-sanctioned excused absence (i.e., a letter from a doctor, athletic release, etc.) and must be made before the date of the scheduled exam. Make-up exams will be different from the scheduled exam (e.g., essay) and may be proctored by personnel who do not have extensive knowledge in the area being tested.

**IV. Tentative Lecture Schedule:**

<b>Date</b>	<b>Lecture Topic</b>	<b>Mottram &amp; Chester</b>
Aug. 20	Introduction	
Aug. 22	What are Performance Enhancing Drugs & Ergogenic Factors?	Ch. 1
Aug. 24	Limits to Human Performance and Influence of Drugs	Ch. 1 - 2
Aug. 27	History of Doping and Oversight (IOC, WADA, USADA, etc.)	Ch. 3
Aug. 28	Why Regulate Doping in Sports at All?	Ch. 4 - 5
Aug. 30	Current Regulations and Control of Doping in Sport	Ch. 4 - 5
Sept. 3	<b>LABOR DAY HOLIDAY</b>	
Sept. 5	Pharmacology	-
Sept. 7	Pharmacokinetics	-
Sept. 10	Skeletal Muscle Design I	-
Sept. 12	Skeletal Muscle Design II	-
Sept. 14	Skeletal Muscle Growth Pathways	-
Sept. 17	<b>EXAM I</b>	-
Sept. 19	Cardiovascular System	-
Sept. 21	Respiratory System	
Sept. 24	Bioenergetics	-
Sept. 26	Anabolic Agents I	Ch. 9
Sept. 28	Anabolic Agents II	Ch. 9 + 12
Oct. 1	Peptide Hormones I	Ch. 10
Oct. 3	Peptide Hormones II	Ch. 10
Oct. 5	$\beta$ -2 Agonists	Ch. 11
Oct. 8	Diuretics and Masking Agents	Ch. 13
Oct. 10	Oxygen Transport (Hemoglobin / RBCs / EPO)	Ch. 14
Oct. 12	Blood Doping, EPO and O <sub>2</sub> Carriers	Ch. 14
Oct. 15	<b>EXAM II</b>	
Oct. 17	Stimulants	Ch. 17
Oct. 19	Narcotics	Ch. 18
Oct. 22	Narcotics / Cannabinoids	Ch. 18 & 19
Oct. 24	Glucocorticoids	Ch. 20
Oct. 26	Alcohol I	Ch. 21
Oct. 29	Alcohol II	Ch. 21
Oct. 31	Beta Blockers	Ch. 22
Nov. 2	Caffeine	Ch. 25
Nov. 5	NSAIDS I	Ch. 23
Nov. 7	NSAIDS I	Ch. 23
Nov. 9	OTC Drugs / Herbals	Ch. 24
Nov. 12	<b>Exam III</b>	
Nov. 14	Supplements for High-Intensity Exercise	-
Nov. 16	Other Supplements	-

Nov. 19	Exercise Nutrition	-
Nov. 21-25	<b>THANKSGIVING BREAK</b>	
Nov. 26	Artificial Environments	-
Nov. 28	Gene Doping	Ch. 16
Nov. 30	Wrap Up	-
Dec. 5	<b>FINAL EXAMINATION 11:00 am - 1:00 pm</b>	

#### **V. Academic Accommodations:**

Any student requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (the instructor) as early in the semester as possible. DSP is located in Student Union (STU) 301 and is open 8:30 – 5:00pm Monday – Friday. The phone number for DSP is (213) 740-0776.

#### **VI. Academic Integrity:**

Students who violate University standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the University. Given that dishonesty in any form harms not only the individual but other students and the University, academic integrity policies will be strictly enforced. I expect you will familiarize yourself with the Academic Integrity guidelines found in the current SCampus (Student Handbook).

#### **VII. Academic Integrity Violations:**

- Academic dishonesty/misconduct (plagiarism, cheating, unauthorized collaboration, etc.) will not be tolerated. All academic integrity violations will result in a grade sanction and will be reported to the Office for Student Judicial Affairs. It is your responsibility to “reasonably” protect your own work from the plagiarism of others.
- If plagiarism is detected on a group project, all members of the group will be held responsible.
- You are expected to be familiar with the Academic Integrity guidelines found in the current SCampus. An electronic version is available at <http://usc.edu/scampus>.

#### **VIII. Disruptive and Threatening Student Behavior:**

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students’ ability to learn and an instructor’s ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action.

#### **IX. Blackboard**

Notes will be periodically posted on blackboard. However, the information posted on blackboard is not the only material that will be on the exam. If you attend class regularly you will be updated on the status of lecture notes and course material/announcements.

#### **X. Electronic Devices**

Please turn off or disable all cell phones or other electronic communication devices during class time. Using a laptop in class to take lecture notes is permitted. However, I expect you to turn off your browser, email, messaging and any other programs that do not involve the course material.