Syllabus

HST150/151 - Principles of Pharmacology

Spring 2020

M, W (Jan, Feb, Mar)

January 06, 2020 – March 25, 2020

Mon, Jan 6	0	Forman/Rosow, Introduction	9:00-10:30
	1	Forman, Receptors/Dose-Response I	10:30-12:00
Wed, Jan 8	2	Forman, Receptors/Dose-Response II	9:00-11:30
		Case 1: Anticholinesterase	11:30-12:00
Mon, Jan 13	3	Walsh, Pharmacokinetics I	9:00-12:00
	4	Walsh, Pharmacokinetics II	
Wed, Jan 15	5	Forman, Autonomic N. System I	9:00-11:00
	6	Forman, Autonomic N. System II	
		Case 2: Pheochromocytoma	11:00-11:30
		Case 3: Cocaine	11:30-12:00
Mon, Jan 20		**Martin Luther King Day**	
Wed, Jan 22	7	McAdam, Antibiotics I	8:30-9:00
	8	McAdam, Antibiotics II	9:30-10:30
		MATLAB In-Class Exercise	11:00-12:00
Mon, Jan 27	9	Dershwitz, Drug Metabolism	9:00-11:00
	10	Dershwitz, Pharmacogenomics	
		Case 4: Acute Renal Failure	10:30-11:00
		Case 5: Alcohol toxicity	11:00-11:30
Wed, Jan 29		****QUIZ 1**	8:30-9:00
	11	Forman, Local Anesthetics	9:00-10:00
	12	Kaptchuk, Placebo	10:00-11:00
		Case 6: Anticoagulation	11:00-11:30
		Case 7: Ulcerative Colitis	11:30-12:00
Mon, Feb 3	13	Baker, Cardiovascular Drugs I	9:00-11:00
	14	Baker, Cardiovascular Drugs II	
		Case 8: Lipid Lowering Drugs	11:00-11:30
		Case 9: Thyroid Disease	11:30-12:00
Wed, Feb 5	15	Ishizawa, General Anesthetics	9:00-10:00
	16	Rosow, Drug Development	10:00-11:00
		Case 10: STEMI	11:00-11:30
		Case 11: Anticoagulation in PCI	11:30-12:00

Mon, Feb 10		****QUIZ 2**	8:30-9:00
	17	Wexler, Diabetes Therapy	9:00-10:00
	18	Ruskin, Antidysrhythmics	10:00-11:00
		Case 12: Oral Hypoglycemics	11:00-11:30
		Case 13: QT Prolongation	11:30-12:00
Wed, Feb 12		**PROBLEM SET DUE**	
	19	Weinblatt, Anti-inflammatory Drugs	9:00-10:00
	20	Rosow, Drug Interactions	10:00-11:00
		Case 14: WPW	11:00-11:30
		Case 15: Gout	11:30-1200
Mon, Feb 17		**President's Day**	
Wed, Feb 19		****MIDTERM EXAM****	9:00-10:30
	21	Evins, Cannabinioids Addiction	11:00-12:00
Mon, Feb 24	22	Rosow, Neuropsychopharm I	9:00-11:00
	23	Rosow, Neuropsychopharm II	
		Case 16: Cancer Analgesia	11:00-11:30
		Case 17: Drug Abuse	11:30-12:00
Wed, Feb 26	24	Fotuhi, Neuropsychopharm III	9:00-11:00
	25	Fotuhi, Neuropsychopharm IV	
		Case 18: Placental Transfer	11:00-11:30
		Case 19: Depression/Anxiety	11:30-12:00
Mon, Mar 2		****QUIZ 3**	8:30-9:00
	26	Rosow, Opioids I	9:00-11:00
	27	Rosow, Opioids II	
		Case 20: Serotonin Syndrome	11:00-11:30
		Case 21: Migraine	11:30-12:00
Wed, Mar 4	28	Kesselheim, Pharmacoeconomics	9:00-10:00
	29	Avorn, Pharmacoepidemiology	10:00-11:00
		Case 22: Geriatric Pharmacology	11:00-11:30
		Case 23: Drug reactions	11:30-12:00
Mon, Mar 9	30	Dershwitz, Toxicology I	9:00-11:00
	31	Dershwitz, Toxicology II	
		Case 24: Asthma	11:00-11:30
		Case 25: Glaucoma	11:30-12:00
Wed, Mar 11		****QUIZ 4**	8:30-9:00
	32	Shapiro, Chemotherapy I	9:00-11:00
	33	Shapiro, Chemotherapy II	

		Case 26: Poison Control I	11:00-11:30
		Case 27: Poison Control II	11:30-12:0
Mon, Mar 16	33	Spitzer, Immunosuppression	9:00-10:00
	35	Langer, Controlled Drug Delivery	10:00-11:00
		Case 28: Folate	11:00-11:30
		Case 29: Transplant Rejection	11:30-12:00
Wed, Mar 18	36	Ichinose, Nitric Oxide	9:00-10:00
		Case 30: PPHN	10:00-10:30
		Case 31: Pharmacogenetics	10:30-11:00
Mon, Mar 23		REVIEW SESSION	9:00-12:00
Wed, Mar 25		****FINAL EXAM****	9:00-12:00
Luncheon– Location: TMEC, HST Back Room			12:00-2:00

Location: All lectures, cases, and exams will meet in **TMEC 250**.

Core Faculty:

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Guest Faculty: See contact information document.

Content: The objective of this course is to teach an approach to the study of pharmacologic agents. It is not intended to be a review of the pharmacopoeia nor is it intended to replace discussions of relevant drugs in the organ system HST pathophysiology courses. The course material will focus on the basic principles of biophysics, biochemistry and physiology related to drug action and interaction, distribution, metabolism and toxicity. The course will consist of lectures, and lecturer- and student-led case discussions.

Texts: **Required**: *Principles of Pharmacology: The Pathophysiologic Basis of Drug Therapy*, 4th Edition, D. Golan ed., Lippincott Williams and Wilkins, Philadelphia, PA, 2017. This book is well written and also does an excellent job of explaining mechanisms.

Required: PharmCards: Review Cards for Medical Students by Eric Johannsen and Marc Sabatine, Fourth or Fifth Edition (2009 or 2018). These cards are great study aids for Step 1, and we will utilize sets of cards to help you keep up with numerous drugs and mechanisms.

Optional: *The Pharmacological Basis of Therapeutics*, 13th Edition, edited by L.L. Brunton, et al.; McGraw-Hill, New York, NY, 2018. "G & G" is a classic 2000-page reference – the "bible" of pharmacology (named for the original editors, Goodman and Gilman). It is available to you online. if needed during the course.

Quizzes: See Quiz Schedule handout for more details. To keep you up to date, we will have 4 quizzes throughout the course consisting of multiple choice and short answer questions directly from pre-assigned reading material. A few questions may mimic those used in the Step 1 board examination.

Cases: See Cases handout for more details. A significant portion of the course material is assigned to student presentations. There are **30** cases in total, and each student will co-present 2 cases.

Readings: See the Reading Assignments for more details. In addition to the readings in Golan and Pharmcards, most lectures have associated lecture notes, and all of this will be required reading for the exams.

Student Evaluation: Student grades will be a composite of the following:

In-Class MATLAB Exercise	10%
Midterm Exam	20%
Final Exam	25%
Cases (2 per student)	30%
Quizzes (3 best out of 4)	15%

Extra credit up to 5% may be granted to students for extraordinary group leadership or class participation.

HST M.D; M.D, Ph.D; and MEMP students taking this course will receive a grade of Excellent, Satisfactory, or Unsatisfactory for internal HST records. The grade of Marginally Satisfactory may also be given in borderline cases. Student grades will be recorded, however, as Pass/Fail by the Harvard Medical School and MIT Registrars. Any student desiring a letter grade at MIT should register for HST151 instead of HST150.

HST150 2020-- Clinical Case Presentations

Case 1- Insecticide Poisoning (presented by TA)

Case 2- Pheochromocytoma
Case 3- Cocaine
Case 4- Renal Dysfunction
Case 5- Ethanol Toxicity
Case 6- Anticoagulation (Drug Interactions)
Case 7- Ulcerative Colitis
Case 8- Lipid Lowering Drugs
Case 9- Thyroid Disease (Thyroid storm)
Case 10- STEMI
Case 11- PCI Anticoagulation
Case 12- Hypoglycemics
Case 13- QT Prolongation
Case 14- Gout
Case 15- Wolff-Parkinson-White
Case 16- Cancer Pain Management
Case 17- Physician Drug Abuse
Case 18- Placental Transfer
Case 19- Anxiety & Depression
Case 20- Serotonin Syndrome
Case 21- Migraine
Case 22- Geriatric Pharmacology (Barbiturate toxicity)
Case 23- Drug Reactions (Idiopathic and Anaphylaxis)
Case 24- Asthma
Case 25- Glaucoma
Case 26- Poison Control I (Ethylene Glycol and Digitoxin)
Case 27- Poison Control II (Cyanide and Lead)
Case 28- Folate (cancer and inflammation)
Case 29- Transplant Rejection
Case 30- Pulmonary Hypertension of the Newborn
Case 31-Pharmacogenetics (CYP2D6 and codeine vs. metoprolol)