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MPHS: Psychiatric and Behavioral Health Sciences Concentration

M19-562 Addictions and Addictive Behaviors

Spring 1 and 2, 2012 (1/18/12 o 5/2/12), 3 credits

Instructors: Michael Lynskey, PhD (Course master); Arpana Agrawal, PhD; Richard Grucza, PhD

This course provides an overview of the principles of substance-related addictions and the processes and mechanisms that underlie addiction. Students will be introduced to the epidemiology and developmental course of addiction, risk and protective influences that act on the course of addiction and its adverse health consequences. Both genetic and environmental underpinnings will be discussed. The impact of policy and economics will be studied. Effective interventions and treatment modalities will also be briefly discussed. Finally, while the emphasis of the course is on addiction to substances (alcohol, tobacco, drugs), the emerging class of non-substance addictive behaviors (food compulsions, internet/gaming, shopping and pathological gambling) will also be discussed. The class format will be broadly divided into formal lectures that cover the core competencies and assigned readings for in-class discussion. Students will be expected to participate in class discussions, complete written assignments (review paper format) and present one of their written assignments via in-class presentation.

Course note: A required course for the Psychiatric and Behavioral Health Sciences Concentration.

Prerequisite: M21-560 Biostatistics I or course master approval. Meets Wednesdays 1 p.m. to 4 p.m.

Reading materials (Books are on reserve at the library):

Goldstein A. *Addiction: From Biology to Drug Policy*". 2nd Ed. Oxford University Press, 2001. Chapters 1-5

McKim, WA *Drugs and Behavior: An Introduction to Behavioral Pharmacology*. 5th Ed. Prentice Hall, 2003. Chapter 19.

Erickson CK. *The Science of Addiction: From Neurobiology to Treatment*. Norton & Co, 2007. Chapters, 1, 3.

Journal articles and reviews will also be assigned.

Course activities: Lectures, class discussion, review paper presentation, three short papers.

Competencies:

1. Define addiction and identify its core features and diagnostic criteria.
2. Illustrate the various theories of addiction.
3. Understand the developmental course of addiction.
4. Recognize its adverse health consequences and comorbid disorders that occur in conjunction.
5. Differentiate between the pharmacological and neurobiological underpinnings of addiction to various drugs.
6. Identify the genetic and environmental factors associated with addiction.

7. Obtain a basic understanding of interventions and treatments for addiction.
8. Understand how policy, economics, taxation, legislation and other regional parameters influence addiction.
9. Appreciate other addictive behaviors.

Evaluation:

10%	Attendance and in-class discussion
30%	Class presentation
60%	Three short essays (one per instructor @ 20% each)

Course week and short description:

Part I: History and preclinical background

1. Drugs: definition, history of use, patterns of use, abuse potential.
2. Drug related harm: morbidity, mortality (GBD)
3. Policy and economics; Taxation and Legislation as environmental factors; readings
4. Neurobiology/ Pharmacology; Neurotransmitters endogenous ligand-receptor interactions; readings
5. Behavioral concepts: Koob-Volkow (intoxication, withdrawal— affective, craving) – tolerance sensitization, cue-induced craving, positive-negative re-enforcement. Choice → Habit → Compulsion.

Part II: Nosology and epidemiology

6. Diagnostic criteria, evolution, current status, psychometric issues, epidemiology, survey methodology reading/ assignment: Is DSM-5 a step in the right direction?)
7. Descriptive Epidemiology and Secular Trends
8. Developmental course and stages of addiction (includes early onset and exceptions)
9. Comorbidity and the externalizing spectrum
10. Other addictions – Gambling. What constitutes addiction?

Part III: Genes and Environments

11. Environmental risk and protective factors (e.g., family environment, peers);
12. Twin studies, linkage and association;
13. Heritability, cross-heritability,
14. molecular genetics – complex polygenic, most validated genes.
15. GxE and rGE; Epigenetics; readings

16. Final Lecture: Interventions

Nicotine.

Harm reduction (e.g., needle & syringe exchange programs).

Medications development

Guest lecture: The experience of Addiction (e.g., AA).

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