**Psychology 3401 YA – Behaviour and Drugs**
**2016/2017 Course Outline**


**INSTRUCTOR**: Dr. K. Oinonen
**OFFICE**: SN 1011; Telephone 343-8096
**EMAIL:** koinonen@lakeheadu.ca

**CLASS:** Wednesdays 7:00 – 10:00 pm; room ATAC 2001
**OFFICE HOURS:** Thursdays 1:00 – 2:00 pm, or by appointment

**GRADUATE TEACHING ASSISTANTS:**
Hillary Jones (Office Hours: Wednesdays 4:30-5:30 pm or by appointment), office: BB 1074, E-mail: hjones@lakeheadu.ca
Laura McGeown (Office Hours: email for appointment), office: SN 1042c, E-mail: lmcgeown@lakeheadu.ca

**COURSE DESCRIPTION:**
The main focus of this course is the scientific study of the behavioural and neurobiological effects of psychoactive drugs. The course will help the student understand the relationship between drugs, the body, and behaviour and allow one to better evaluate drug use and abuse (over-the-counter drugs, prescription drugs, and social drugs). It will also enable you to make better decisions, backed by critical thinking and understanding of the research, when you face personal or social issues concerning the use of drugs in the future. In order to understand drug effects, we must understand drug action. The first part of the course will cover background material that applies to many drugs, such as pharmacokinetics and pharmacodynamics (e.g., dosage, route of administration, time course, side effects, metabolism, neurotransmitters, and brain areas affected). The second part of the course will presuppose knowledge of the drug action previously discussed and will concentrate on the major categories of psychoactive drugs (e.g., alcohol, stimulants, opiates, etc.).

Secondary goals of the course are to expose you to research on the behavioural effects of drugs; to increase your understanding of the design of drug studies; and to aid you in searching for, locating, reading, and critically evaluating original research articles in the area. This will be accomplished though the journal article readings and the paper. As it will be necessary to be familiar with the library and the use of electronic databases/indexes for the paper (i.e., Psychinfo and Pubmed), it is strongly recommended that you sign up for one of the library's free sessions on Electronic Indexes (registration is limited).

This course is one of the core Biological Bases of Behaviour courses in the Psychology program. As such, the focus of the course is on the biological, rather than the social, effects of drugs on behaviour. Although the course assumes that those taking it have only a basic knowledge of brain and behaviour (such as that covered in Introductory Psychology), those who do have a background in biological and biopsychological sciences may have an advantage.

**READINGS:**

**Required:**
Meyer, J.S. & Quenzer, L.F. (2013). *Psychopharmacology: Drugs, the Brain and Behavior* (2nd ed.). Sunderland, MA: Sinauer.

Psychology 3401 Readings: a list of original research articles is available to download through links provided. Please download the pdfs at the links.

**Strongly Recommended:**
American Psychological Association. (2009). *Publication manual of the American psychological association* (6th ed.). Washington, DC: American Psychological Association.

**EVALUATION:**

| | | |
|---|---|---|
| Exam #1 | 20% | (**October 5**) |
| Exam #2 | 20% | (**November 23**) |
| Exam #3 | 20% | (**February 15**) |
| Paper | 20% | (**due March 8**) |
| Exam #4 | 20% | (**date to be announced – April 10th – 24th**) |

You are required to write four examinations and a paper in this course in order to complete all course requirements. The exams will consist of multiple choice, short-answer, and essay questions. The first three exams will be written in class (3 hours). The final exam will be written during the scheduled examination period in April (3 hours). Exams will cover material from the lectures and the text. While the exams are not cumulative, the information learned in the first half of the course will be essential for your understanding of subsequent material on individual drugs.

After each exam, grades will be posted in MyInfo. Other than the following two noted exceptional circumstances, a grade of "0" will be assigned for missed exams. 1) If an exam is missed because of illness, a signed medical certificate is required within seven days of the exam. 2) If an exam is missed for another exceptional circumstance, other arrangements may be made on compassionate grounds. However, documentation (within seven days of the exam) or direct prior communication with me will be required. Please note that booking an early flight for the October or February break does not count as an exceptional circumstance. For more information about formal examinations, please refer to the relevant sections of the academic calendar (http://navigator.lakeheadu.ca/~/Catalog/ViewCatalog.aspx?htmllink=true&pageid=viewcatalog&catalogid=19&topicgroupid=9347).

The Paper represents a critical examination of the research on a specific topic related to drugs and behaviour. That is, one must identify a specific research question that involves both a psychoactive drug or class of drugs and a behaviour, and then critically evaluate the available research. The chosen drug must have a clear psychoactive effect (i.e., an ability to cross the blood-brain barrier and alter brain functioning) and one must examine the effect of the drug on a behaviour (e.g., perception, mood, cognition, sleep, consciousness etc.). Please ensure that you are examining the effect of the drug on a behaviour or a set of behaviours. Some examples of topics include: How does chronic alcohol use affect memory? What is the impact of acute nicotine use on sleep duration? Some things to keep in mind when choosing a topic include: (a) more specific behaviours are easier to examine in a paper like this (e.g., examine short-term verbal memory as opposed to just memory, or examine rates of depressive disorders as opposed to general mood), and (b) be sure to distinguish between acute and chronic effects of the drug. Please discuss your topic with the graduate assistants or the instructor to ensure that your topic is appropriate and that you understand the paper guidelines. Students may complete the paper individually or in pairs. Each student or pair must choose one specific topic and read the relevant research. **Five articles** must be discussed and cited in the paper and must meet the following criteria: four articles must represent original research studies; one article can be a review article; two of the articles must have a publication date between 2015 and 2017. The best electronic search indexes for this course are PSYCHINFO and PubMed. The purpose of the paper is to review and critique the most relevant research on a particular chosen issue, provide a conclusion based on the research, justify your conclusion, and provide suggestions for future research in the area. The paper must be 10 to 15 double-spaced typewritten pages (with margins and font as per APA format: 1 inch margins and 12-pt Times Roman or Courier font). The entire paper must not be longer than 15 pages. APA style must be followed. Copies of the full five articles must also be turned in with the paper. Be sure to put your name(s) and student number(s) on the paper. If articles fitting the above listed criteria do not exist for your chosen topic (they should exist for most topics), choose another topic or please contact the instructor or graduate assistants. A tentative marking scheme for the paper is provided in this course outline. Please review this as it provides further details regarding the expectations for this paper. **The paper is due at the beginning of class on March 8th**. Late papers will be deducted 5% per day and will not be accepted after March 22nd (2 weeks later).

**TENTATIVE SCHEDULE:**

| Date | Topic | Readings |
|---|---|---|
| September 7 | Introduction & Basic Pharmacology | Chapter 1 |
| September 14 | Basic Pharmacology | Chapter 1 |
| September 21* | Structure and Function of the Nervous System | Chapter 2 |
| September 28 | Chemical Signaling by Neurotransmitters | Chapter 3 |
| | Catecholamines | Chapter 5 |
| October 5 | **Exam #1 - First Exam** (in class) | |
| October 12 | Fall Study Break – No Class | |
| October 19 | Research Methods in Neurobehavioural Pharmacology | Chapter 4 |
| October 26 | Serotonin, Acetylcholine, Glutamate and GABA | Chapters 6-8 |
| November 2* | Tolerance, Withdrawal, Sensitization, and Conditioning of Drug Effects | pp. 32-36 and 253-258 |
| November 9* | Drug Abuse, Dependence, and Addiction | Chapter 9 |
| November 16 | Extra Material and Review | |
| November 23 | **Exam #2 - Second Exam** (in class) | |
| November 30 | Alcohol | Chapter 10 |
| | | |
| January 11* | The Opioids | Chapter 11 |
| January 18 | Psychomotor Stimulants: Cocaine and Amphetamines | Chapter 12 |
| January 25* | Nicotine | Chapter 13 |
| February 1* | Caffeine and the Methylxanthines | Chapter 13 |
| February 8* | Cannabis | Chapter 14 |
| February 15 | **Exam #3 - Third Exam (in class)** | |
| February 22 | Study Week – No Class | |
| March 1 | Hallucinogens, PCP, and Ketamine | Chapter 15 |
| March 8* | Inhaled Substances | Chapter 16 |
| | **Paper due** | |
| March 15* | Anxiolytics and Anxiety Disorders | Chapter 18 |
| March 22 | Antidepressants, Mood Stabilizers, & Affective Disorders | Chapter 19 |
| March 29 | Antipsychotics & Schizophrenia | Chapter 20 |
| April 5 | Extra Material and Review | |
| April 10th – 24th | **Exam #4** – **Final Exam** – time/date/location to be announced | |

* Indicates that an additional reading is required (i.e., a journal article). See pages 5 to 7.
Note: Final Date for Withdrawal (Drop) of a full year course is Friday February 3, 2017.

**POLICY ON RETURN OF EXAMS**

Exams will not be returned to students. Since some exam questions may be used again in other semesters, returning old exams would destroy the security of exams. However, you will have an opportunity to view your exam in class. If you would like to look at your examination further, you may do so during the graduate assistant's office hours, for a period of TWO WEEKS after any exam is discussed in class. If you cannot come in during regular office hours, please make an appointment.

**BONUS POINTS (RESEARCH PARTICIPATION OR ARTICLE REVIEWS)**

In order to supplement the typical in-class experiences, additional opportunities are available to learn more about psychological research. These experiences are offered to help you better understand how research is conducted in order to help you understand study results. You may earn up to a maximum of 3 additional bonus points to be added to your final mark in one of two ways, or in combination:

1. Participate in Psychology Department approved research studies that are posted throughout the academic term(s) on http://lupsych.sona-systems.com . An account will be created for you by the 2nd week of classes. You

must complete participation in studies by the last day of classes. These studies have been approved by the Psychology Research Ethics Committee or the Lakehead University Research Ethics Committee.

2. Submit a synopsis of a recent journal article. This involves choosing a journal article published in 2014 onward that interests you, write a 500-word (2 pages double-spaced) critical commentary about that article, and submit an e-copy of your synopsis and the article to the instructor by the last day of classes. Each submitted synopsis is worth 1.5 bonus points.

**ACCOMODATIONS**

Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please visit: http://studentaccessibility.lakeheadu.ca

**Tentative Marking Scheme for Psychology 3401 Paper**

1) **APA Style** /10
- -proper referencing in the reference list
- -proper referencing in the text
- -title page format, proper page numbering, header, running head
- -paper should comply with all aspects of APA style as described in the APA manual

2) **Paper Organization and Structure** /10
- -should be easy to follow and understand
- -should contain a title page, abstract, the main body of the paper, and a reference section (as per APA style)
- -overall paper structure and paragraph structure

3) **Appropriateness of Topic and Articles** /10
- -paper must examine either the effect of a specific psychoactive drug or class of psychoactive drugs on a particular behaviour (as indicated in the course outline)
- -articles must be from peer-reviewed journals
- -articles must be included with the paper (full articles)
- -unless previous permission was given, articles must meet specific criteria:
  - a) at least 4 original research studies
  - b) 1 review article is allowed
  - c) 2 of 5 articles must have a publication date between 2012 and 2014

4) **Evidence of Critical Thinking** /10
- -critical examination of the 5 studies
- -a discussion of strengths and weaknesses of the studies
- -evidence of the ability to make connections and note discrepancies between the studies
- -provide suggestions for future research

5) **Writing Quality** /10
- -grammar, punctuation, spelling
- -a scientific objective writing style (do not write in the first person, use other journal articles and the APA manual as a guideline)
- -orderly presentation of ideas, precision and clarity, smoothness of expression

6) **Overall Quality of the Paper** /50

FINAL MARK = /100

General Suggestions for the Paper: (1) Learn how to search Psychinfo and Pubmed for relevant articles, and how to obtain the articles online, in the library, or through interlibrary loan (or *Racer*). (2) Order or obtain your articles very early to ensure that they are appropriate. (3) Meet with the GAs or professor to ensure that your topic and articles are appropriate.

**Psychology 3401: Behaviour and Drugs**
**Dr. K. Oinonen**
**Required Readings 2016/2017**

The following 9 readings were chosen to expose you to a variety of original research articles in psychopharmacology. The pdfs can be downloaded at the links provided, but many of the papers must be downloaded on campus. Please copy and paste the link if clicking the link does not work. If the paper does not pop up automatically, you may need to click "download pdf". Each article is *not* intended to be representative of the results of the research in that area. Furthermore, it is not expected that you will understand all of the details of the statistical analyses or the complex methodology in some of the studies. However, it is expected that you have a basic understanding of: (a) the purpose of the study, (b) the methodology, (c) the general results, (d) some limitations of the study, and (e) the implications of the study for the effects of drugs on behaviour. Reading these articles will help prepare you to understand the research articles that you will need to read and critique for the paper. These articles will be discussed in class and all lecture material could appear on the examinations. It is expected that you will come to class prepared to discuss the articles.

**September 7: Introduction and Basic Pharmacology**
No articles

**September 14: Basic Pharmacology**
No articles

**September 21: Structure and Function of the Nervous System**
van Praag, H., Kempermann, G., & Gage, F.H. (1999). Running increases cell proliferation and neurogenesis in the adult mouse dentate gyrus. N*ature Neuroscience, 2(3)*, 266-270.
http://www.nature.com/neuro/journal/v2/n3/pdf/nn0399_266.pdf

**September 28: Chemical Signaling by Neurotransmitters & Catecholamines**
No articles

**October 5:** Exam #1

**October 12: Fall Study Break (no class)**

**October 19: Research Methods in Neurobehavioural Pharmacology**
No articles

**October 26: Serotonin, Acetylcholine, Glutamate and GABA**
No articles

**November 2: Tolerance, Withdrawal, Sensitization, and Conditioning of Drug Effects**
Remington, B. Roberts, P., & Glauthier, S. (1997). The effect of drink familiarity on response to alcohol. *Addictive Behaviors, 22(1)*, 45-53.
http://ac.els-cdn.com/S0306460396000032/1-s2.0-S0306460396000032-main.pdf?_tid=6a36dc92-7083-11e6-a371-00000aacb361&acdnat=1472762220_8662aee5003af78e56b07533cda481f1

**November 9: Drug Abuse, Dependence, and Addiction**
Piazza, P.V., & LeMoal, M. (1998). The role of stress in drug self-administration. Trends in Pharmacological Science, 19, 67-74. doi:10.1016/S0306-4603(96)00003-2
http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T1K-3S839TP-8&_user=1067228&_coverDate=02%2F19%2F1998&_rdoc=1&_fmt=high&_orig=search&_origin=search&_sort=d&_docanchor=&view=c&_searchStrId=1456982411&_rerunOrigin=google&_acct=C000051238&_version=1&_urlVersion=0&_userid=1067228&md5=88d1154cae64e4e6b163c55fbe6b13f5&searchtype=a

**November 16: Extra Material and Review**
No articles

**November 23: Exam #2 - Second Exam (in class)**

**November 30: Alcohol**
No articles

**January 11: The Opioids**
Clair, J., Martin, L., Bond, A.J., O'Ryan, D., Davis, P., & Curran, H.V. (2009). An experimental study of aggressive and neutral interpretative bias in opiate-dependent and opiate abstinent men. *Journal of Psychopharmacology, 23*, 428-435. doi: 10.1177/0269881108091880 http://jop.sagepub.com/content/23/4/428.full.pdf+html

**January 18: Psychomotor Stimulants: Cocaine and Amphetamines**
No articles

**January 25: Nicotine**
Eisenberg, M.J., Filion, K.B., Yavin, D., Belisle, P., Mottillo, S., Joseph, L., Gervais, A., O'Loughlin, J., Paradis, G., Rinfret, S., & Pilote, L. (2008). Pharmacotherapies for smoking cessation: A meta-analysis of randomized controlled trials. *Canadian Medical Association Journal, 179(2),* 135-44. http://www.cmaj.ca/cgi/reprint/179/2/135

**February 1: Caffeine and the Methylxanthines**
Ogawa, N., & Ueki, H. (2003). Secondary mania caused by caffeine. *General Hospital Psychiatry, 25(2),* 138-139. http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T70-487K320-D&_user=1067228&_coverDate=04%2F30%2F2003&_rdoc=1&_fmt=high&_orig=search&_origin=search&_sort=d&_docanchor=&view=c&_acct=C000051238&_version=1&_urlVersion=0&_userid=1067228&md5=d144a664de0506fc31c24117a877f585&searchtype=a

**February 8: Cannabis**
Zammit, S., Allebeck, P., Andreasson, S., Lundberg, I., & Lewis, G. (2002). Self reported cannabis use as a risk factor for schizophrenia in Swedish conscripts of 1969: Historical cohort study. *British Medical Journal, 325,* 1-5. http://www.bmj.com/content/325/7374/1199.full.pdf

**February 15: Exam #3 - Third Exam (in class)**
No articles

**February 22: Study Week – No Class**
No articles

**March 1: Hallucinogens, PCP, and Ketamine**
No articles

**March 8: Inhaled Substances**
Morrow, L.A., Gibson, C., Bagovich, G.R., Stein, L., Condray, R., & Scott, A. (2000). Increased incidence of anxiety and depressive disorders in persons with organic solvent exposure. *Psychosomatic Medicine, 62,* 746-750. http://www.wpic.pitt.edu/research/biometrics/Publications/Biometrics%20Archives%20PDF/866a-2000%20Morrow%20Condray%20Anx%20Dep%20Exp.pdf

**March 15: Anxiolytics and Anxiety Disorders**
Bareggi, S., Ferini-Strambi, L., Pirola, R., & Smirne, S. (1998). Impairment of memory and flunitrazepam levels. *Psychopharmacology, 140*, 157-163. http://www.springerlink.com/content/qdrtcvg4m1m1rw30/fulltext.pdf

**March 22: Antidepressants, Mood Stabilizers, & Affective Disorders**
No articles

**March 29: Antipsychotics & Schizophrenia**
No articles

**April 5: Extra Material and Review**
No articles