MCMASTER UNIVERSITY  
Department of Kinesiology  

Kinesiology 2FO3  
Course Title: Human Growth, Motor Development and Physical Activity  

Term: Fall/2011  
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DESCRIPTION  
This course has been developed as an entry level course in Human Growth and Development to be taught to students in the 2nd year of our Kinesiology program. In third or fourth year, students will have the option of enrolling in the more advanced level of this course, KIN 3UO3, Human Growth and Maturation. The current course, KIN 2FO3 will focus on age- and sex-related changes in somatic growth, development and maturity spanning the pre-natal to early adulthood periods of development, with an emphasis on prenatal genetic, epigenetic and neuro-endocrine influences and post-natal physical activity influences on health and physical performance capacity.  

This course is a pre-requisite for admission to KIN 4QO3, Pediatric Exercise Physiology.  

OBJECTIVES  
1. to introduce and differentiate the concepts of somatic growth, development, and maturation  
2. to introduce study designs and basic techniques used to assess somatic growth, development and biological maturation  
3. to examine key statistical and conceptual constructs in the formulation and application of growth charts with specific reference to the definition of “normal” growth and the prediction of future somatic growth, health and physical performance outcomes  
4. to examine developmental stage, chronological age, sex and maturity-associated variation in somatic growth and development (in addition to their general regulatory mechanisms) and their health and physical performance implications pre- and post-natally
5. to introduce the concept of physical activity, to examine how physical activity varies as a function of age, sex, and development, and to investigate how physical activity measures relate to health and performance

From conception to adulthood in human beings!

REQUIRED TEXT(s)/READINGS

Required Readings: Course Lecture Notes: The instructor will provide a reading package consisting of all slides presented in class lectures. Information on these slides may only be partially complete and students are expected to come to class and incorporate supplemental information discussed by the instructor to the summary comments on the slides. This courseware package will be available at cost (TBD). Location for pick-up will be announced in class. The instructor will also provide PDF copies of his lecture slides on the KIN LAB Server so students have the option of printing these out and bringing them to class, in lieu of purchasing the printed courseware package. The courseware package is intended to provide only a general background to the course material, and the instructor may refer to all or portions of these materials in lectures and may from time to time supplement these materials with additional information not provided in the courseware package. The internet address to access these materials is provided below. Internet lecture materials will not be available, however, until the beginning of classes in September!

http://kinlabserver.mcmaster.ca/2F03/

Recommended Readings: Course Text: The text, Growth, Maturation and Physical Activity will be used as the main reference source for this course and is highly RECOMMENDED. While students do not necessarily have to purchase their own copy of this text, specific information from the text is required to complete the case study assignment component of this course. There are several copies of the course text on reserve in the Mills Library, but these are heavily used and not always available when requested. Lastly this text is also the recommended text for KIN 3U03 and is a great resource for KIN 4Q03, Pediatric Exercise Physiology. The publication details for this text are as follows: Growth, Maturation and Physical Activity, R.M. Malina, C. Bouchard and O. Bar-Or, Second Edition, Human Kinetics Publishers Inc.; Champaign, Il., 2004; ~$110.95 Cdn. new in the McMaster Bookstore or at reduced price as a used copy from the tank or from students who have already taken this course.

Ancillary Reading Materials : Students are also expected and required to complete on their own time, the 3 Centres for Disease Control (CDC) Growth and Development Interpretation Modules found at the web site http://depts.washington.edu/growth/index.htm. Information from these sources is required for completion of the case study assignment! The CDC has developed 3 specific modules (referred to as Related CDC Modules at the above website) that will help you in the completion of the case study assignment. The 3 module topics include: 1) Overview of the CDC Growth Charts, 2) Using the BMI-for-age Growth Charts, and 3) Overweight Children and Adolescents: Recommendations to Screen, Assess and Manage.
You may also wish to complete the 7 training modules provided on this web site, but these are NOT REQUIRED for completion of the case study assignment or for any of the course tests/examinations!

TOPICS TO BE COVERED

The instructor will attempt to cover the following sections and topics, but not necessarily in the order presented below and not necessarily in formal lectures. Some topics may be covered less formally in tutorials or as assigned readings depending on circumstances and the needs of the class. The instructor will provide a list of lecture topics and assigned readings during class.

1. **Concepts & Perspectives In Human Growth, Maturation and Development.**
   - definitions and context: growth, maturation, development, physical activity,
   - rationale for studying these phenomena

2. **Approaches & Techniques In The Study of Human Growth, Maturation & Performance.**
   - basic study designs and research approaches in growth studies
   - measurement and observation principles in growth/maturity assessment
   - prenatal assessment techniques
   - postnatal assessment techniques
   - physical activity assessment approaches

3. **Interpretation & Applications Of Human Growth Charts**
   - construct and definition of normal & abnormal growth
   - statistical underpinnings of growth chart interpretations
   - concepts of channelling and tracking
   - common applications of growth charts
   - mathematical modelling in growth

4. **Pre-Natal Growth and Development.**
   - stages of pre-natal growth
   - human embryology
   - epigenetic periods and teratogens
   - sex determination and differentiation
   - congenital malformations/defects
   - fetal growth patterns
   - functional development of the fetus
   - factors affecting birth weight
   - twins and twinning

5. **Post-Natal Somatic Growth and Development.**
   - Somatic Growth.
   - growth patterns in stature and weight
- growth patterns in other dimensions
- changes in body proportions
- somatic growth, sports performance and exercise capacity
- adolescent growth spurt in stature
- growth spurts in dimensions
- changes in dimensions relative to PHV
- variation in relation to sexual maturity
- age, sex and developmental influences on physical activity profiles
- comparison of Canadian activity levels with international populations
- associations between activity with health and physical performance
- recommended guidelines for physical activity

**EVALUATION**

The course will consist of three (3) one-hour lectures per week for the entire term (not withstanding lost class time for the in class/mid-term exam(s). Grading will consist of a mid-term examination (35%), the case study (20%) and a final exam (45%). Students will complete the case study over the course of the term, integrating all relevant course reading and internet information pertinent to the growth pattern described in the study. This assignment will be due approximately two weeks from the last scheduled in class lecture (precise date to be announced in class) and must be placed in the KIN 2FO3 DROP OFF BOX located just outside Rm. 224 in the IWC.

**Course Evaluation:**

1) Case Study Applied Work Assignment = 20%
2) Mid-Term Exam = 35%
3) Final Exam = 45%

**Exams:**

Students must write both the mid-term exam (Date TBD) and the final exam to pass the course. Tests and exams will be either essay, short-answer or a combination of multiple choice, true or false and also possibly short answer questions. Exams will cover material from lectures (including additional material not provided in the course notes but discussed by the professor and/or provided as supplemental slides) assigned readings, and internet resources.

**DROP BOXES**

Course drop boxes are located on the second floor of the IWC near IWC 224 (please do not place assignments in the administrative drop box located outside IWC 219C).

**POLICY REGARDING DEFERRED TESTS AND EXAMS**

Students who miss a term test or final exam for legitimate reasons such as illness may be allowed to write a deferred or "make-up" test. For in class or mid-term tests the deferred or make-up exam must be written as soon as possible (within a 1 week period if possible) after the original sitting and it is the student’s responsibility to contact the instructor to coordinate and finalize the scheduling of this make-up exam. The deferred or make up exam will test the same content and
concepts as in the original exam, but the format may differ between exams e.g. a short answer or written exam may be provided instead of the original multiple choice/true and false format! In all instances, appropriate documentation must be submitted to the Office of the Associate Dean, Faculty of Science.

Students who miss a Registrar-scheduled final exam can apply to the Associate Dean’s office for permission to write in the deferred final exam schedule. In all cases, appropriate documentation must be submitted to the Office of the Associate Dean, Faculty of Science, for consideration of deferred examination permission. Under no circumstances will the instructor re-schedule a final exam for individual students.

**ACADEMIC INTEGRITY**

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences (e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript reading "Grade of F assigned for academic dishonesty", and/or suspension or expulsion from the university). It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at: http://www.mcmaster.ca/univsec/policy/AcademicIntegrity.pdf

The following illustrates only three forms of academic dishonesty:
• Plagiarism (e.g. the submission of work that is not one's own or for which other credit has been obtained),
• Improper collaboration in group work.
• Copying or using unauthorized aids in tests and examinations.

**MODIFICATIONS TO COURSE**

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

**POLICY REGARDING SHORT TERM ABSENCE FROM CLASS/UNIVERSITY**

If you are absent from the university for a minor medical reason, lasting fewer than 5 days, you may report your absence, without documentation, using the McMaster Student Absence Form (as long as the missed work is worth less than 29% of the final course grade). The MSAF can only be used once per term. Absences for a longer duration or for other reasons (e.g. religious, personal) must be reported to the Faculty of Science Associate Dean's office, with documentation, and relief from term work may not necessarily be granted. After submitting the MSAF, you must also report your absence to the course instructor (blimkie@mcmaster.ca)
within 2 working days to learn what relief may be granted for the work you have missed, and relevant details such as revised deadlines, or time and location of a make-up exam.

**POLICY ON THE USE OF CALCULATORS IN THE EXAMINATIONS**

Non-programmable calculators will be permitted during examinations.

**FEEDBACK**

A feedback process allows us to better plan for the delivery of our courses in the future. Please take full advantage of this opportunity to provide feedback about any aspect of this course either directly to the instructor in person at any time throughout the term or during the more formal written course evaluation process at the end of term.

**Instructor’s Policy Regarding Final Examination Reviews**

The instructor will set two additional office hours in the post final exam period for students to informally review their performance on the final exam. These will be two, 2 hours blocks (one per week) within the first two weeks following the release date of the final grades in the course. Students are required to set an appointment with either the instructor or Teaching Assistant assigned to this task via e-mail for this purpose. Following this informal review period all examinations will be in Departmental storage and students will need to launch an official review appeal through the Faculty (Associate Dean) if beyond this 2 week window.

THE END