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INSTRUCTIONAL ASSISTANT: Dr. Sajeni Mahalingam  Room: GSB 105  Email: mahals4@mcmaster.ca
TEACHING ASSISTANTS: TBA

Course Description:
This course mainly focuses on examining metal toxicity on human systems at the genetic, cellular, biochemical, and physiological levels, as well as discusses the socio-economic and political parameters that impact metal concentrations in local and global environments. In addition, the potential toxicity of supplements or food products will be discussed.

PREREQUISITES: BIOLOGY 2B03, credit or registration in LIFESCI 2N03 is recommended.

Required Texts & Materials: A reading list will be posted on Avenue to Learn (http://avenue.mcmaster.ca/). Students are responsible for downloading the readings and bringing them to class.

Course Objectives:
By the end of this course students will be able to:
1. Describe the role of essential metals in the body
2. Explain how the levels of essential metals in the body are physiologically regulated through homeostatic mechanisms
3. Compare and contrast the epidemiology and health effects of essential metal deficiency and excess in the body
4. Research and synthesize information on the toxicity associated with the consumption of non-essential metals and other substances
5. Evaluate a current community issue as well as current regulations, potential issues, and solutions
6. Effectively communicate knowledge gained via group work to different audiences both orally and in writing

Format and Class time:
Lectures: Tuesdays, 3:30PM - 5:20PM in LRW B1007
Lectures will focus on essential metals (iron, copper, zinc) with toxicity potential. These are metals needed for many cellular and physiological processes, but become toxic when present in quantities that exceed their requirement. Thus, homeostatic mechanisms in the body play a crucial role in maintain optimum levels of these essential metals.

Lectures will be divided in 3 modules. Each module will be devoted to one essential metal with focus on:
- Why is the metal essential?
- Homeostatic mechanisms
- Health effects of deficiency and/or overload (pathology, etiology, epidemiology of the disease)
**Tutorials:** Weekly mandatory tutorials (1 hour and 50 minutes long; please check the schedule for the time and location of the tutorial you are enrolled in). Tutorials will be mainly devoted to work on a community engagement mock project and to have student lead-activities on selected topics (see information below; additional details will be posted in Avenue to Learn and discussed in class).

**Evaluation (tentative scheme):**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Tutorial</td>
<td>30%</td>
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<tr>
<td>Community Engagement Project (15%)</td>
<td></td>
</tr>
<tr>
<td>Student lead-activity (11%)</td>
<td></td>
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<tr>
<td>Avenue quizzes (4%)</td>
<td></td>
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<tr>
<td>Tests (one per module)</td>
<td>70%</td>
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<tr>
<td>Test 1 (20%)</td>
<td></td>
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<tr>
<td>Test 2 and 3 (25% each)</td>
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**Notes on Assessment:**

**Community Engagement Assignment**
Working in groups, students will use peer-reviewed scientific literature and other reliable sources to research a current community issue and potential solutions in regards to exposures to selected non-essential metals. Student groups will have to develop a knowledge dissemination product for a target audience in the community as well as formally present orally and in writing their project at the end of the term. Further details regarding this group project assignment will be posted on the course website and discussed in class.

**Student lead-activities**
This group assignment requires students to research a supplement or food product that, when consumed at all or in excess could be harmful to human or animal health. Student groups will lead a class discussion on the topic chosen. Further details regarding this group assignment will be posted on the course website and discussed in class.

**Quizzes**
There will be 5 quizzes throughout the term to be completed individually in tutorial on Avenue to Learn. Only the best 4/5 will count towards your final grade. The quizzes will test your overall understanding of assigned readings and what has been discussed in the previous tutorial.

**Tests**
The tests (duration: 90 min) will be written during class time according to the course schedule. Tests may include multiple choice, short answer, labeling figures, definitions, and can include compare and contrast short answer questions.
Please not that there is no final exam. However, students that have missed one test and have provided appropriate documentation will write a make-up cumulative exam at the end of the term.
Course Procedures

Absences & Missed Work:
If you are absent from the university for a minor medical reason, lasting up to 3 calendar days, you may report your absence, once per term, without documentation, using the McMaster Student Absence Form (MSAF). Absences for a longer duration or for other reasons must be reported to your Faculty office, with documentation, and relief from term work may not necessarily be granted. When using the MSAF, immediately report your absence to Dr. Mahalingam by email (normally within 2 working days). Dr. Mahalingam will indicate 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/quiz/test. Please note that the MSAF may not be used for final deliverables, nor can it be used for a final examination or its equivalent.

Please read further details about the new MSAF policy here:
http://academiccalendars.romcmaster.ca/content.php?catoid=13&navoid=2208#Requests_for_Relief_for_Missed_Academic_Term_Work

Checking Your Grades:
Office hours with the Teaching Assistants will be arranged following the tests to review your test if you wish to do so. All grade concerns and discrepancies must be reported to Dr. Rodriguez Moncalvo within a week of receiving the grade.

Re-mark Policy:
Requests for re-evaluation of exams must be made to the Professor within 1 week of the posting of grades and after reviewing your tests. Only exams that are fully written in non-erasable pens or are typewritten will be considered for remarking. All requests must be made in writing. Please be aware that an approval for a remark can result in an increase, decrease or no change to the original mark.

Communication between Students and Faculty:
The University’s official method of correspondence with students is through a valid McMaster University e-mail account. It is the student’s responsibility to keep his/her @mcmaster.ca account active and check it on a regular basis. All emails from students must include your full name, student #, and course code (LIFESCI 3N03).

Student Responsibilities:
To get the most out of the course, you must be prepared to:
- attend all sessions, make up all missed work, and provide documentation for authorized absences;
- interact frequently with faculty, students, TAs, and other support staff;
- plan and manage your own time;
- complete preparatory tasks (such as reading, writing assignments, and initial research) in advance of sessions;
- develop and use reflective learning skills (for example identifying learning objectives, planning and carrying out research tasks, acting on academic feedback);
- work as an effective, efficient, and responsive team member on group assignments;
- follow all the guidelines as outlined in the Introduction section of the Laboratory Manual;
- check the course Avenue site, and your McMaster and Avenue e-mail daily for updates; and,
follow all university policies and guidelines, and in all ways be a responsible university member.

Senate Student Policies
Students can view full policies here (http://www.mcmaster.ca/policy/Students-AcademicStudies/).
Senate Policy Statements are also available from the Senate Secretariat Office, Room 104, and Gilmour Hall.

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 (notation reads: "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.
The following illustrate only four of many 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;
- copying or using unauthorized aids in laboratory exercises
- improper collaboration in group work; and
- copying or using unauthorized aids in quizzes, tests and examinations

All students are reminded of the importance of academic integrity, and the serious consequences of academic dishonesty.

Student Code of Conduct
You acknowledge that your behavior in all aspects of this course should meet the standards of the McMaster University Student Code of Conduct. You understand that any inappropriate behavior directed against any of your colleagues, teaching assistants, or the instructional team will not be tolerated. Disruptive behavior during any session (e.g. lecture, seminar, lab, tutorial) such as talking, sleeping or non-class computing while an individual presents information, or constantly being late, will also not be tolerated. Abuse, ridicule, slander, inappropriate language, and discrimination towards instructors teaching staff, teaching assistants and other students will not be tolerated in any capacity. Shared spaces including e-spaces such as the Avenue to Learn course discussion board are to be considered inclusive and safe.

Plagiarism Detection
In this course, we will be using a web-based service (Turnitin.com) to reveal plagiarism. Students will be expected to submit their work electronically to Turnitin.com and in hard copy so that it can be checked for academic dishonesty. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, etc.). To see the Turnitin.com Policy, please go to www.mcmaster.ca/academicintegrity).
Copyright Policy
In this course you will have access to material that is subject to copyright laws. This includes (but is not limited to) textbooks and all resources developed by the instructors such as lab manuals, demonstration videos, quizzes, assignments, tests, class notes and class slides. Under no circumstance are you allowed to share or redistribute this material in any printed or electronic form without the explicit written consent of the copyright holder. This includes posting any course material on Internet bulletin boards, course repositories, social networks, etc.

The instructors and the university reserve the right to alter this outline if necessary.
The instructors 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.