Instructor:
Dr. Francis Zvomuya
Email: francis.zvomuya@umanitoba.ca

Tutor: TBD
Email: TBD

Marker: TBD
Email: TBD
Office: TBD

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## Course outline

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<th># lectures</th>
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<td>1. Principles of scientific experimentation and checklist for design and analysis of experiments.</td>
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Other: 2 midterms, one virtual computer-lab class 3
**Software**

Students will gain expertise in the use of statistical analysis computer software (primarily **SAS**).

**Computer session:** 09:00-11:00 Friday, Jan. 22

**SAS University Edition**

- Free for students and staff
- Can run on PCs, Macs or Linux workstations
- Contains a subset of all the functionality in SAS Foundation. Nonetheless, it includes most of the SAS products that you will need
- You do not have to be connected to the internet in order to run it

**SAS 9.4 for Windows**

- Licenses available from IST at $100/machine
Textbooks and reference material

The following manual will be used to learn the SAS system for analysis of data:


Apart from the manual, there is no required textbook for this course. However, you will benefit from owning a good text to use as a general reference not only for this course but for your research work.

Two good ones are

Useful texts


See also **SAS online reference manuals, including:**
The MIXED Procedure
The GLIMMIX Procedure
SAS version 9.4 reference materials (we use procedures described in Base SAS or in SAS/STAT)

http://support.sas.com/documentation/94/index.html
Assignments

Assignments will be given out at the last class of each week (usually Thursday) and will be due one week later.

Students are encouraged to work together on assignment problems. The assignment work that is submitted by each student, however, should be written up independently and be in each student’s own words.

Access assignment material through your UM Learn site for this course.
### Student evaluation

<table>
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<tr>
<td>Midterm exam 1, <strong>February 12</strong></td>
<td>15%</td>
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<tr>
<td>Midterm exam 2, <strong>March 12</strong></td>
<td>25%</td>
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<tr>
<td>Assignments</td>
<td>25%</td>
</tr>
<tr>
<td>Final exam (date TBD)</td>
<td>35%</td>
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*All exams will be open book*
Assessment of grades

You will get numeric scores for assignments and exams.

These scores will be weighted according to the above scheme to come up with a final numerical score.

This final score will be used to assign the letter grade which will appear on your transcript -- See section 4 of the General Academic Regulations of the University online calendar for a description of the letter grade system (2018-2019)

http://crscalprod1.cc.umanitoba.ca/Catalog/ViewCatalog.aspx

Final scores will be rounded, e.g., -76.4 becomes 76, thus a B; 76.5 becomes 77, thus a B+.

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<td>91-100</td>
<td>A+</td>
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<tr>
<td>84-90</td>
<td>A</td>
</tr>
<tr>
<td>77-83</td>
<td>B+</td>
</tr>
<tr>
<td>70-76</td>
<td>B</td>
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<tr>
<td>65-69</td>
<td>C+</td>
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<td>60-64</td>
<td>C</td>
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<tr>
<td>50-59</td>
<td>D</td>
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<tr>
<td>Under 50</td>
<td>F</td>
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**Voluntary Withdrawal**
The last day for voluntary withdrawal without academic penalty is **Mar. 31**

**Assignments**
For assignment work, I encourage you to work together on problems - the purpose of assignments is to understand the material.

You may also use the internet for background material.

The completed assignment work that you hand in must be in your own words.

If the internet, or other material is used in your work, this must be properly referenced.

Please refer to the University Calendar for statements on academic dishonesty including Plagiarism and Cheating. See section 8 of the General Academic Regulations of the University online calendar (2018-2019)

[http://crscalprod1.cc.umanitoba.ca/Catalog/ViewCatalog.aspx](http://crscalprod1.cc.umanitoba.ca/Catalog/ViewCatalog.aspx)

**Examples of previous tests**

Previous tests will be posted on the UM Learn site for this course.
ANSC 7500
Methodology in Agricultural and Food Sciences

Lecture Notes (Author: G.H. Crow)
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