COURSE OUTLINE

1. **Course:** SCIE 301, Research Design and Statistical Analysis - Winter 2021

   **Lecture 01:** TR 11:00 - 12:15 - Online

   **Instructor**  
   Dr. Hua Shen  
   hua.shen@ucalgary.ca  
   403 220-6309  
   MS 526  
   3:30PM-4:30PM on Tuesday and 11AM-12PM on Wednesday

   **Email**  
   Phone

   **Office**

   **Hours**

   **Online Delivery Details:**

   This course is being offered online in real-time via scheduled meeting times, you are required to be online at the same time.

   To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

   This course has a registrar scheduled, synchronous final exam. The writing time is 2 hours + 50% buffer time.

   **Lectures** - All lectures will be synchronous online sessions using Zoom. Students are expected to participate regularly. The lectures will be recorded and posted for subsequent viewing.

   **Tutorials** - All tutorial sessions will be synchronous, and students are expected to attend regularly to interact with the teaching assistants. The recorded tutorials will be posted.

   **Midterms** - Both midterms will be completed synchronously in class. The writing time is 1 hour plus 50% buffer time.

   **Final Exam** - This course has a registrar scheduled, synchronous final exam. The writing time is 2 hours + 50% buffer time.

   **Course Site:**

   D2L: SCIE 301 L01-(Winter 2021)-Research Design and Statistical Analysis

   **Note:** Students must use their U of C account for all course correspondence.

   All course information and updates will be posted regularly on course website. You are responsible for checking the information and updates in a timely manner.

   Given the online nature of the course, students are encouraged to use the discussion forums in D2L for technical and scientific questions related to the course. All other communications (i.e., non-technical or including personal information) with instructor or teaching assistants should be conducted using ucalgary.ca email channels. The instructor and teaching assistant will attempt to reply to student emails within two full business days whenever possible, however, certain inquiries may require additional time.

2. **Requisites:**

   See section 3.5.C in the Faculty of Science section of the online Calendar.

   **Prerequisite(s):**

   24 units (4.0 full-course equivalents) and admission to the Natural Sciences Program.

3. **Grading:**

   The University policy on grading and related matters is described in F.1 and F.2 of the online University Calendar.

   In determining the overall grade in the course the following weights will be used:
<table>
<thead>
<tr>
<th>Component(s)</th>
<th>Weighting %</th>
<th>Date</th>
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</table>
| 4 Assignments | 50%, 12.5% each | A1 on Thursday Jan 28  
A2 on Thursday Mar 4  
A3, group reading, TBD  
A4, group project, TBD |
| 2 Midterms | 30%, 15% each | Midterm 1 on Thursday February 11  
Midterm 2 on Thursday March 11  
both synchronous, 1 hour plus 50% buffer time |
| Final | 20% | to be scheduled registered by Registrar  
synchronous, 2 hours plus 50% buffer time |

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Minimum % Required</th>
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<tbody>
<tr>
<td>A+</td>
<td>95 %</td>
</tr>
<tr>
<td>A</td>
<td>90 %</td>
</tr>
<tr>
<td>A-</td>
<td>85 %</td>
</tr>
<tr>
<td>B+</td>
<td>80 %</td>
</tr>
<tr>
<td>B</td>
<td>76 %</td>
</tr>
<tr>
<td>B-</td>
<td>72 %</td>
</tr>
<tr>
<td>C+</td>
<td>68 %</td>
</tr>
<tr>
<td>C</td>
<td>64 %</td>
</tr>
<tr>
<td>C-</td>
<td>60 %</td>
</tr>
<tr>
<td>D+</td>
<td>55 %</td>
</tr>
<tr>
<td>D</td>
<td>50 %</td>
</tr>
</tbody>
</table>

This course will have a final exam that will be scheduled by the Registrar. The Final Examination Schedule will be published by the Registrar’s Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2 hours.

The final exam will be administered using an on-line platform. Per section G.5 of the online Academic Calendar, timed final exams administered using an on-line platform, such as D2L, will be available on the platform where the additional time will be added to the beginning of the registrar scheduled exam. E.g. If an exam is designed for 2 hours and the final exam is scheduled from 9-11am in your student centre, the additional time will be added to the start time of the exam. This means that if the exam has a 1 hour buffer time,

- a synchronous exam would start at 8am and finish at 11am.

4. Missed Components Of Term Work:

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc…), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

Assignments - Because of the frequency of tests and assignments in this course, late assignments create a big problem for the prompt return of graded work and distribution of answer sheets. Therefore, late assignments will be penalized heavily (50% per day including weekends and holidays or prorated accordingly) to prompt timely submissions. Assignments are deemed late if they are submitted after 11:59PM on the day they are due.

Midterms - Students cannot make up for missed midterms, but the weight can be carried forward to the final exam given legit reasons.

All assigned work should be completed when due. Due dates for all assigned work will be indicated clearly on the handout and/or course website. Arrangements for late submission must be made with the instructor, ideally BEFORE the assigned work is due. Any student who fails to complete the work for legitimate reasons (e.g., illness, religious conviction, technical issues) must discuss with the instructor BEFORE classes end.

5. Scheduled Out-of-Class Activities:

There are no scheduled out of class activities for this course.
6. **Course Materials:**

   Recommended Textbooks:
   - G.P. Quinn and M.J. Keough, Experimental Design and Data Analysis for Biologists, Cambridge University Press, 2002

   Lecture notes and reading materials will be provided by Instructor.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC ELearning online website.

7. **Examination Policy:**

   Exams are to be considered “closed book,” where a basic scientific calculator is the only aid permitted, unless otherwise stated. Students should also read the Calendar, Section G, on Examinations.

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8. **Approved Mandatory And Optional Course Supplemental Fees:**

   There are no mandatory or optional course supplemental fees for this course.

9. **Writing Across The Curriculum Statement:**

   For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section E.2 of the University Calendar.

10. **Human Studies Statement:**

    Students will not participate as subjects or researchers in human studies.

    See also Section E.5 of the University Calendar.

11. **Reappraisal Of Grades:**

    A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See Section I.3 of the University Calendar.

    a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within ten business days of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections I.1 and I.2 of the University Calendar

    b. **Final Exam:** The student shall submit the request to Enrolment Services. See Section I.3 of the University Calendar.

12. **Other Important Information For Students:**

    a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university
community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, Mental Health Services Website) and the Campus Mental Health Strategy website (Mental Health).

b. SU Wellness Services: For more information, see www.ucalgary.ca/wellnesscentre or call 403-210-9355.

c. Sexual Violence: The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at 403-220-2208. The complete University of Calgary policy on sexual violence can be viewed at [https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf](https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf).

d. Misconduct: Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional Code of Conduct and promote academic integrity in upholding the University of Calgary’s reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor’s consent; submitting or presenting work as if it were the student’s own work; submitting or presenting work in one course which has also been submitted in another course without the instructor’s permission; borrowing experimental values from others without the instructor’s approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

Student Handbook on Academic Integrity
Student Academic Misconduct Policy and Procedure
Research Integrity Policy

Additional information is available on the Student Success Centre Academic Integrity page

e. Academic Accommodation Policy: Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at procedure-for-accommodations-for-students-with-disabilities.pdf.

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Program Director of the Natural Sciences Program, Dr. Edwin Cey by email ntscdirector@ucalgary.ca or phone 403 220-8393. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than 14 days prior to the date in question. See Section E.4 of the University Calendar.

f. Freedom of Information and Privacy: This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see Legal Services website.

g. Student Union Information: VP Academic, Phone: 403-220-3911 Email: suv pca@ucalgary.ca. SU Faculty Rep., Phone: 403-220-3913 Email: scien cerep@su.ucalgary.ca. Student Ombudsman, Email: ombuds@ucalgary.ca.

h. Surveys: At the University of Calgary, feedback through the Universal Student Ratings of Instruction (USRI) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.

i. Copyright of Course Materials: All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or non-academic misconduct, in addition to any other remedies available at law.

Course Outcomes:

- Identify an area of research, formulate the scientific research questions and design appropriate and feasible...
research procedures for investigation

- Compare and contrast different research methods and sampling techniques, select the optimal approach for specific research question and provide power calculation to decide the sample size
- Select methods of measurement based on the sources and guide data collection and organization to accurately address the research question
- Develop skills using the statistical software R to manage, prepare and summarize the data using descriptive statistics and graphs
- Construct hypotheses based on the research questions, test them using statistical inferences and software given the samples, draw valid conclusions and interpret the results
- Publicize research procedures and findings in reports, presentations, posters or papers to support programs to decision makers and other clients
- Understand and critically evaluate your own findings and other scientific papers by the commonly used research designs and statistical techniques in natural sciences

Electronically Approved - Jan 07 2021 21:41

Department Approval