UNIVERSITY OF SASKATCHEWAN

COURSE SYLLABUS

COURSE TITLE:	**BIOL 121.3 (The Diversity of Life)**		
COURSE CODE:	82344	TERM:	T1 2021/2022
COURSE CREDITS:	3.0	DELIVERY:	Lecture & Practicum (Lab)
CLASS SECTION:	01	START DATE:	September 2nd 2021
LECTURE LOCATION:	None - Remote delivery	LAB LOCATION:	EDUC rm 1026 – in person delivery
LECTURE TIME:	10.00 to 11.20 pm (T, Th)	LAB TIME:	1.30 to 4.20 pm (M, T, W, Th, or F) or 5.30 to 8.20 pm (M, T, W or Th)
WEBSITE:	Canvas		

Course Description

Our world has at least 15 million species, all of which have adapted to particular environments and lifestyles and use energy to grow and reproduce. We examine these processes in representative organisms from all the major groups, and discuss factors influencing changes in biodiversity over time and space.

Prerequisites

Prerequisite(s): Biology 30 or BIOL 90 or BIOL 107 or BIOL 108.
Note: Students with credit for BIOL 110 will not receive credit for BIOL 121.

Land Acknowledgement

As we gather here today, we acknowledge that the Saskatoon campus of the University of Saskatchewan is on Treaty Six Territory and the Homeland of the Métis. We pay our respect to the First Nation and Métis ancestors of this place and reaffirm our relationship with one another. We recognize that in the course of your studies you will spend time learning in other traditional territories and Métis homelands. We wish you safe, productive and respectful encounters in these places.

Instructor, Course Coordinator & Lab Coordinator

There are 3 instructors for the lecture component of the course, 1 Lab Coordinator and TAs that will be assigned to each lab group. Please email your instructor or lab coordinator if you have any questions.

Contact Information:

Professor Neil Chilton
Instructor & Course Co-ordinator
e-mail: neil.chilton@usask.ca
office location: room 320.7 CSRB

Professor Christy Morrissey
Instructor
e-mail: christy.morrissey@usask.ca
office location: room 120.6 CSRB

Professor Philip McLoughlin
Instructor
e-mail: philip.mcloughlin@usask.ca
office location: room 310.5 CSRB

Joel Yurach
Lab Coordinator
e-mail: joel.yurach@usask.ca
office location: room 1021 Education Building

Instructor Profiles:

Drs. Chilton, Morrissey and McLoughlin are regular faculty members/professors in the Department of Biology. They all teach and conduct research in biology. Their specialized areas of teaching and research are animal parasitology (Chilton), ecotoxicology (Morrissey) and population ecology (McLoughlin). Joel Yurach is responsible for coordinating all aspects of the laboratories for BIOL 121. Your lab group will also be assigned a laboratory Teaching Assistant (TA) who will help you during the lab periods. TAs work under the supervision of Joel Yurach and are senior undergraduate or graduate students at the University.

Learning and Teaching Context

The lectures in this course will be delivered remotely (asynchronous video lectures) with a once weekly live (synchronous) session, whereas the laboratory components of the course will be delivered in-person. The delivery of this course is occurring in a time of transition from remote to in-person classes and may be challenging. Hence, all participants should interact with empathy and care. The following section provides important guidelines to help everyone through the term safely.

Important guidelines for this transition term:

During this transition term it is important that we undertake the in-person elements of this class safely. In order to do this, the university has developed a set of expectations and safety protocols that all students must adhere to if they are to engage in in-person activity.

Throughout the term:

- **Protect the pack:** Right now, the impact of student choices and activities when not on campus cannot be separated from time spent on campus. In order to “protect the pack”, the university is asking all students who are doing in-person work to be mindful and do

whatever possible to lower the risk that you will contract COVID-19 and bring it onto campus.

- **Know what is required and expected of you:** One of the critical lessons learned in dealing with COVID-19 is knowing that situations can change and we must be flexible and ready to adjust our safety protocols. Instead of listing all of the relevant information in your course outline, the university has created a webpage where all up-to-date information around returning to campus is listed. **You are responsible** for **regularly** checking the health and safety guidelines https://covid19.usask.ca/about/safety.php#Expectations and knowing what is expected of you throughout the fall term.

- **Follow all guidance:** Students are expected to follow all guidance provided by the University's Pandemic Recovery/Response Team (PRT), College/Department, professors, lab instructors, TAs, and any other staff member involved in the in-person academic program activities (e.g., Protective Services, Safety Resources).

- **Key channels of communication**: If there is a need for the lab class to pause meeting in-person for a period of time you will be notified. If this occurs, you will be provided with detailed information on what you will need to do in place of the in-person lab class sessions (e.g., read content posted in Canvas, complete learning activities in Canvas). Students will be notified by class announcements in Canvas.

Course Overview

This course is designed to introduce you to the vast and exciting field of biology, with a focus on biological diversity, evolution, adaptations of organisms to specific environments, and the evolutionary, ecological and anthropogenic factors influencing changes in biodiversity over time and space.

Learning Outcomes

By the completion of this course, students will be expected to:

1. have an understanding of biological principles (concepts), and that evolution is the unifying principle in biology
2. gain an appreciation for biology as an experimental science [hence, provide necessary background for advanced study of biology and other related disciplines], an realize that an understanding of biological principles requires knowledge of other fields of science (chemistry, physics, geology, geography, mathematics, biochemistry) and many disciplines within biology (e.g., evolution, ecology, genetics, physiology, structure and function, ethology, parasitology, molecular biology, etc.).
3. obtain knowledge of the diversity and complexity of life, which includes how organisms are adapted to their environment and the variation (e.g., morphological, genetic, physiological, behavioural) that exists among individuals of the same species and between individuals of related species
4. be able to think critically regarding scientific issues in our society and understand the importance of relationships between organisms and their environment, and how biodiversity is constantly changing over time

Learning Charter

The University of Saskatchewan Learning Charter is intended to define aspirations about the learning experience that the University aims to provide, and the roles to be played in realizing these aspirations by students, instructors and the institution. A copy of the Learning Charter can be found at: https://teaching.usask.ca/about/policies/learning-charter.php

Required Resources

Lab Manual: Biology 121.3 Laboratory Manual (2021–2022 Edition).

Textbook: There is **no required textbook** for this course. However, if you are interested in a textbook, we recommend using the same textbook as used for BIOL 120 and BIOL 224:

Russell PJ, Hertz PE, McMillan B, Fenton MB, Maxwell D, Haffie T, Milson B, Nickle T, Ellis S. 2018. *Biology: Exploring the Diversity of Life*. 4th Canadian edition, Nelson Education. ISBN 978-0-17-671888-6 (Hard-copy); 978-0-17-682709-0 (PDF); ebook includes access to MindTap.

Items can be purchased online from the University of Saskatchewan Bookstore: https://bookstore.usask.ca/students.php#MyTextbooks

Class Schedule

Lecture class information [delivered remotely]:

1. Lectures will be delivered asynchronously as modular topics using Panopto video recordings. Instructor PowerPoint slides and/or learning notes will generally be posted before the start of each scheduled class time so that students can view and study these on their own schedule. For each module, there will be suggested readings or other supplementary materials provided, and these will be posted in CANVAS.

2. Synchronous Activities by Instructors during Lecture Times (see dates & times listed in Class Schedule table on next page). We will have live in-class questions and answers, discussion, or other activities, using ZOOM on **Tuesdays (except in weeks 1, 5 and 11) starting at 10.00 am**. A class email will be sent to explain the procedures for participating in these sessions.

3. Lecture quizzes will either be on a **Thursday (in weeks 3, 8 and 12) or Tuesday (in week 5) starting at 10.00 am** (see dates & times listed in Class Schedule Table on next page).

Laboratory class information [delivered in-person]:

1. Labs begin in the week of SEPTEMBER 13th. **Make sure you have registered for a lab on-line.** Students are expected to attend and be on time for all scheduled labs, review labs and final lab exams. The lab schedule is listed in the table below and in your lab manual.

2. **The current edition of the Biology 121.3 lab manual is required for all labs** (this item can be purchased at the Bookstore in Marquis Hall). For your labs you could also bring some spare note paper, pencil, eraser and a ruler. You can bring a dissection kit if you have one,

but they are not required. You may also need some means of accessing Canvas (computer would be good, as it may be difficult to access some Canvas material via smartphone). This will mainly be to submit the occasional assignment via photos or screenshots submitted to Canvas.

Any questions regarding the lab should be directed by e-mail to **Joel Yurach.**

Week/ Dates	**Instructor** **Lecture Modules** (Topics) ***Laboratory Activity***	**Synchronous "Lecture" Activity and** **Lecture Quizzes/ & Assignments**
Week 1 Sept 2	Dr. Chilton: **What is Biology?** (Defining biology & the scientific method) *No lab scheduled this week*	none scheduled
Week 2 Sept 7 Sept 9	Dr. Chilton: **What is Life?** (Characteristics of life & species adaptations) *No lab scheduled this week*	Lecture activity - Tuesday Sept 7 (10.00 am)
Week 3 Sept 14 Sept 16	Dr. Chilton: **Classification of Organisms** (Species concepts & Biological nomenclature) *Lab Period: LAB 1 - Introduction & Prokaryotes*	Lecture activity - Tuesday Sept 14 (10.00 am) Lecture Quiz 1 – Thursday Sept 16 (10.00 am)
Week 4 Sept 21 Sept 23	Dr. Chilton: **Evolution and Variation** (Lamarck & Darwin, Variation, microevolution & natural selection) *Lab Period: LAB 2 – Protists*	Lecture activity – Tuesday Sept 21 (10.00 am)
Week 5 Sept 28	Dr. Chilton: **Evolution and Variation** (Sexual selection & macroevolution) *No lab scheduled this week*	Lecture Quiz 2 - Tuesday Sept 28 (10.00 am) *** note that this quiz is on the Tuesday due to National Day for Truth and Reconciliation [Sept 30]
Week 6 Oct 5 Oct 7	Dr. Morrissey: **History of Biodiversity through Time** (Origin of life, increasing complexity through time) *Lab Period: LAB 3 - Fungi*	Lecture activity – Tuesday Oct 5 (10.00 am)
Week 7 Oct 12 Oct 14	Dr. Morrissey: **History of Biodiversity through Time** (Key events, extinctions and the rise and fall of the dinosaurs) *No lab scheduled this*	Lecture activity – Tuesday Oct 12 (10:00 am)

Week 8 Oct 19 Oct 21	Dr. Morrissey: **Life is Everywhere** (Life in the extremes, ecozones, regional diversity, biodiversity hotspots) *Lab Period: LAB 4 - Green algae, mosses, ferns & club mosses Lab*	Lecture activity – Tuesday Oct 19 (10:00 am) Lecture Quiz 3 – Thursday Oct 21 (10.00 am)
Week 9 Oct 26 Oct 28	Dr. McLoughlin: **Describing Modern Biodiversity and the Hierarchy of Life** (Taxonomic hierarchies, domain/kingdoms, communities & ecosystems) *Period: LAB 5 - Conifers & angiosperms Lab*	Lecture activity – Tuesday Oct 26 (10:00 am)
Week 10 Nov 2 Nov 4	Dr. McLoughlin: **Interactions between Organisms and Environment** (Species distributions, communities, interactions, predator-prey, co-evolution) *Period: LAB 6 - Sponges, Cnidarians, Flatworms & Nematodes* *LAB 7 - Annelids, Mollusks & Arthropods Lab Period*	Lecture activity – Tuesday Nov 2 (10:00 am)
Week 11	**NO CLASSES - Fall Midterm Break**	
Week 12 Nov 16 Nov 18	Dr. McLoughlin: **Interactions between Organisms and Environment** (Island biogeography, disturbance and succession, food webs) *Lab Period: LAB 8 - Echinoderms & Chordates*	Lecture activity – Tuesday Nov 16 (10:00 am) Lecture Quiz 4 – Thursday Nov 18 (10.00 am)
Week 13 Nov 23 Nov 25	Dr. McLoughlin: **Human Threats to Biodiversity** (Habitat loss, invasive species, overexploitation) *Lab Period: REVIEW LAB*	Lecture activity – Tuesday Nov 23 (10:00 am)
Week 14 Nov 30 Dec 2	Dr. Morrissey: **Human Threats to Biodiversity** (Pollution, climate change, agriculture in the prairies) *Lab Period: Laboratory Exam*	Lecture activity – Tuesday Nov 30 (10:00 am) Lecture Video Assignment Submit by midnight, Friday Dec 3
Week 15 Dec 6	**Review lecture session** *No lab scheduled this week*	Lecture activity – Tuesday Dec 7 (10:00 am)

Last day to withdraw from course without academic penalty is: Monday December 6th 2021

Course Website & Supplementary Resources

Students are required to read the course syllabus.

Instructors will record lectures and make them available on the BIOL 121 course page of CANVAS. The rules regarding to copyright (page 10) apply to these recordings. Hence, recordings are only intended for the use of students registered in this class.

Supplementary materials may also be placed on the BIOL 121 course page of CANVAS.

Instructors may provide a copy of their lecture notes on CANVAS to you as a courtesy. You are not required to download or print these notes. While instructors will endeavour to have the lecture notes posted sometime in advance of the lectures; however, they will not guarantee this.

Recommended Technology for Remote Learning

Students are reminded of the importance of having the appropriate technology for remote learning components of this course. The list of recommendations can be found at https://students.usask.ca/remote-learning/tech-requirements.php.

Grading and Assessment Scheme

Grading component	%
Lecture quizzes (4 x 5% each)	20
Final lecture exam	30
Lecture video assignment	10
Laboratory assignments and quizzes	20
Laboratory exam	20
Total	100

Evaluation Components

Lecture Quizzes:

Value: 20% of final course grade (5% per quiz)
Date: The dates and times of these are shown in the Class Schedule.
Format: 10 multiple choice questions per quiz
Length: 15 minutes
Description: Based on lecture material

Final (Lecture) Exam:

Value: 30% of final course grade
Date: Consult Final Exam Schedule
Length: 1.5 hours
Format: 70 multiple-choice questions.
Description: The exam is comprehensive in that it will cover all lecture material.

Lecture video assignment:

Value: 10% of final course grade
Date: Friday December 4 (before midnight) as shown in the Class Schedule.
Format: The video assignment will be conducted on the last learning module topic of "*Human threats to Biodiversity*". Students will be tasked to select a specific case study for one threat of their choice and design a short 3-minute video in a news-style report,
Description: The video may take any creative delivery format – mock interview, news report, dramatization, presentation for an NGO or government body, etc. Emphasis will be on content, demonstrated understanding of the topic, and confidence in oral delivery mode rather than production quality (smartphone video and free editing software is fine). It is recommended that you develop a storyboard and script before recording your video and be sure to credit any image, text, video or sound sources as per copyright guidelines. A grading rubric will be provided. All student submissions must be uploaded in CANVAS.

Laboratory Assignments and Quizzes:

Value: 20% of final course grade
Date: see Schedule in Lab manual
Format: Quizzes (written); spot tests; flower project, other in-lab assignments (possibly worksheets or RO sheets)
Description: The quizzes will be 15-20 minutes in duration and test material from the previous two or three lab exercises. The questions will generally require a short-written answer. Spot tests involve images shown in PowerPoint and short questions about the specimen shown. No phones, laptops, tablets or other material allowed. Additional information about the lab quizzes can be found in your lab manual and will be given in the weeks prior to the assignment. Additional information can be found in your lab manual and will be given in the weeks prior to the assignment.

Laboratory Exam:

Value: 20% of final course grade
Date: During the week of November 30th (during the lab session)
Length: 1.5 hours
Format: This will be a mixture of spot test, short written answers and practical questions (slide prep, etc.).
Description: The exam is comprehensive in that it will cover all laboratory classes. Calculators and all other electronic devices are not allowed.

Criteria That Must Be Met to Pass

The Laboratory Exam and Lecture Final Exam are **required** elements, and therefore must be completed in order for a student to be eligible to pass this course.

University of Saskatchewan Grading System

Students in BIOL 121 are reminded that the University has established a grading system to be used in all of its courses. Information on literal descriptors for grading at the University of Saskatchewan (reproduced below) can be found at:
http://students.usask.ca/academics/grading/grading-system.php

For information regarding appeals of final grades or other academic matters, please visit the Student Conduct and Appeals section of the University Secretary's webpages:
https://secretariat.usask.ca/student-conduct-appeals/appeals-in-academic-matters.php

Scheduling of Exams

Final examinations and the laboratory exam will be open book and delivered remotely. They must be written on the date and time scheduled. Final examinations may be scheduled at any time during the examination period in December 2021; students should therefore avoid making prior travel, employment, or other commitments for this period.

Students are encouraged to review all examination policies and procedures:
http://students.usask.ca/academics/exams.php

Missed Exams and Quizzes, and Late Assignments

If a student encounters **a technical difficulty during a synchronous assessment** (e.g., lecture quiz and the final exam) they **must contact the instructor responsible immediately** (i.e., during the time of the synchronous assessment) **by email** to explain the technical issue, and to avoid being assigned a grade of zero for that evaluation task.

LECTURE QUIZZES - If a student is absent from a **lecture quiz** due to medical or any other university-approved reason, they **must advise the instructor responsible (= Prof. Chilton for quizzes 1 and 2, Prof. Morrissey for quiz 3, and Prof. McLoughlin for quiz 4) by email within 24 hours of the missed quiz**, in order to avoid being assigned a grade of zero for that assignment.

VIDEO ASSIGNMENT - Late submission of the video assignment will incur a 10% penalty per day after the due date for a period of up to 3 days. Questions related to the video assignment should be directed to **Prof. Morrissey or Prof. McLoughlin.**

LABORATORY QUIZZES, SPOT TESTS, PRELAB TESTS & RO SHEETS/WORKSHEETS - If a student is absent from the lab quizzes, spot tests and prelab tests due to medical or any other any other university-approved reasons, they must advise **Joel Yurach by email within 24 hours of the missed assignment**, in order to avoid being assigned a grade of zero for that assignment.

LABORATORY EXAM - If a student is absent from the **laboratory exam** due to medical or any other valid reason, **they must advise Joel Yurach by email within 24 hours of the missed exam**. Documentation must be provided to explain the absence from the exam and to have an opportunity to write the exam at a later date.

FINAL EXAM - If a student is absent from the **final exam** due to a university-approved reason (such as medical or compassionate reasons, see https://policies.usask.ca/policies/academic-affairs/academic-courses.php#8StudentAssessmentIssuesandSpecialCircumstances), **they must apply to the Dean's Office of the College in which they are registered for an opportunity to write a Deferred Final Exam**, **within 3 working days of the missed exam**. Documentation must also be provided to explain the absence from the final exam. Deferred exams may utilize a different format than the regular exam, at the sole discretion of the instructors.

Copyright

Course materials are provided to you based on your registration in a class, and anything created by your professors and instructors is their intellectual property, unless materials are designated as open education resources. This includes exams, PowerPoint/PDF slides and course notes. Additionally, other copyright-protected materials created by textbook publishers and authors may be provided to you based on license terms and educational exceptions in the Canadian Copyright Act (see http://laws-lois.justice.gc.ca/eng/acts/C-42/index.html).

Before you copy or distribute others' copyright-protected materials, please ensure that your use of the materials is covered under the University's Fair Dealing Copyright Guidelines available at https://library.usask.ca/copyright/general-information/fair-dealing-guidelines.php. For example, posting others' copyright-protected materials on the open web is not covered under the University's Fair Dealing Copyright Guidelines, and doing so requires permission from the copyright holder.

For more information about copyright, please visit https://library.usask.ca/copyright/index.php where there is information for students available at https://library.usask.ca/copyright/students/rights.php, or contact the University's Copyright Coordinator at mailto:copyright.coordinator@usask.ca or 306-966-8817.

Student Feedback

Students are encouraged to E-mail with the instructors to review their performance anytime during the course by appointment.

Integrity Defined (from the Office of the University Secretary)

The University of Saskatchewan is committed to the highest standards of academic integrity (https://academic-integrity.usask.ca/). Academic misconduct is a serious matter and can result in grade penalties, suspension, and expulsion.

Prepare for Integrity

Students are expected to act with academic integrity.

- Students are encouraged to complete the Academic Integrity Tutorial to understand the fundamental values of academic integrity and how to be a responsible scholar and member of the USask community (tutorial link: https://libguides.usask.ca/AcademicIntegrityTutorial) .
- Students can access campus resources that support development of study skills, time and stress management, and ethical writing practices important for maintaining academic integrity and avoiding academic misconduct.

Responses to Misconduct

Students are expected to be familiar with the academic misconduct regulations (https://governance.usask.ca/student-conduct-appeals/academic-misconduct.php#About).

- Definitions appear in Section II of the academic misconduct regulations.
- The academic misconduct regulations apply regardless of type of assessment or presence of supervision during assessment completion.
- Students are advised to ask for clarification as to the specific expectations and rules for assessments in all of their courses.
- Students are urged to avoid any behaviour that could result in suspicions of cheating, plagiarism, misrepresentation of facts. Students should note that posting copyrighted course materials (e.g., notes, questions, assignments or exams) to third party websites or services or other forum or media without permission is an academic or non-academic misconduct offense.

Non-academic offenses are dealt with under the Standard of Student Conduct in NonAcademic Matters and Regulations and Procedures for Resolution of Complaints and Appeals.

Important Note: *Additional information about student misconduct specific to BIOL 121 can be found in the laboratory manual. BIOL 121 students are required to read and understand the information about misconduct that is presented in the laboratory manual.*

Integrity in a Remote Learning Context

Although learning in a remote context is different to the in-person elements of the course, the rules and principles governing academic integrity remain the same. If you ever have questions about what may or may not be permitted, ask your instructor. Students have found it especially important to clarify rules related to exams administered remotely and to follow these carefully and completely.

Examinations with Access and Equity Services (AES)

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Access and Equity Services (AES) if they have not already done so. Students who suspect they may have disabilities should contact AES for advice and referrals at any time. Those students who are registered with AES with mental health disabilities and who anticipate that they may have responses to certain course materials or topics, should discuss course content with their instructors prior to course add / drop dates. In order to access AES programs and supports, students must follow AES policy and procedures. For more information or advice, visit https://students.usask.ca/health/centres/access-equity-services.php, or contact AES at 306-966-7273 or aes@usask.ca.

Students registered with AES may request alternative arrangements for **final examinations**. Students must arrange such accommodations through AES by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by AES.

For information on AES services and remote learning please visit https://updates.usask.ca/info/current/accessibility.php#AccessandEquityServices

Student Supports

Academic Help for Students

The University Library offers a range of learning and academic support to assist USask undergraduate and graduate students. For information on specific services, please see the Learning page on the Library web site https://library.usask.ca/support/learning.php.

- Remote learning support information https://students.usask.ca/study/remote-learning.php
- Class and study tips https://students.usask.ca/remote-learning/class-and-study-tips.php
- Remote learning tutorial https://libguides.usask.ca/remote_learning
- Study skills materials for online learning https://libguides.usask.ca/studyskills
- A guide on netiquette, principles to guide respectful online learning interactions https://teaching.usask.ca/remote-teaching/netiquette.php

Teaching, Learning and Student Experience

Teaching, Learning and Student Experience (TLSE) provides developmental and support services and programs to students and the university community. For more information, see the students' web site http://students.usask.ca.

Financial Support

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact Student Central (https://students.usask.ca/student-central.php).

Aboriginal Students' Centre

The Aboriginal Students' Centre (ASC) is dedicated to supporting Aboriginal student academic and personal success. The centre offers personal, social, cultural and some academic supports to Métis, First Nations, and Inuit students. The centre is also dedicated to intercultural education, brining Aboriginal and non-Aboriginal students together to learn from, with and about one another in a respectful, inclusive and safe environment. Students are encouraged to visit the ASC's Facebook page (https://www.facebook.com/aboriginalstudentscentre/) to learn more.

International Student and Study Abroad Centre

The International Student and Study Abroad Centre (ISSAC) supports student success and facilitates international education experiences at USask and abroad. ISSAC is here to assist all international undergraduate, graduate, exchange and English as a Second Language students in their transition to the University of Saskatchewan and to life in Canada. ISSAC offers advising and support on matters that affect international students and their families and on matters related to studying abroad as University of Saskatchewan students. Please visit students.usask.ca or updates.usask.ca for more information.

College Supports

Students in Arts & Science are encouraged to contact the Undergraduate Student Office and/or the Trish Monture Centre for Success with any questions on how to choose a major; understand program requirements; choose courses; develop strategies to improve grades; understand university policies and procedures; overcome personal barriers; initiate pre-career inquiries; and identify career planning resources. Contact information is available at: http://artsandscience.usask.ca/undergraduate/advising/