

Course Outline

College and Career Preparation

Winter 2022

MATH 20-2AHF, Mathematics 20-2

5 credits, 6 hours lecture

Topics covered include right angle trigonometry; applications involving rates and ratios (scale relationships of 2D and 3D shapes); manipulation and application of formulas; apply the power laws on integral and rational exponents; evaluate absolute vales; perform all operations (addition, subtraction, multiplication, division) on radicals; solve radical equations; graph and apply quadratic functions; solve quadratic equations; spatial reasoning. Extensions to the material may include a Business Prep module involving the interpretation and analysis of statistical data and the utilization of inductive and deductive reasoning to prove conjectures and a Trades prep module for further exploration of 3D objects (model, draw, describe scale diagrams, etc.) and the creation and interpretation of circle and line graphs.

Alberta Education Course Equivalency: MATH 20-2

Prerequisites: MATH 10, MATH 13, MATH 10-C, or permission from the Program Chair

Instructor: Tracy Boger

Office: S213F

Phone: 780 791-4833

Email: tracy.boger@keyano.ca

Office Hours

I am available for virtual meetings by appointment every Wednesday between 9:30 AM and 3:30 PM.

Hours of Instruction

Monday 1:00 – 2:50 Tuesday 1:00 – 2:50 Friday 1:00 – 2:50

Required Resources

Textbook: Principles of Mathematics 11: Alberta (Nelson)

Other supplies: TI83 or TI84 plus calculator & graphing paper

Course Outcomes

Upon successful completion of the course, the student shall be able to:

- Solve problems that involve the application of rates.
- Solve problems that involve scale diagrams using proportional reasoning.
- Demonstrate an understanding of the relationships among scale factors, areas, surface areas and volumes of similar 2-D shapes and 3-D objects.
- Derive proofs that involve the properties of angles and triangles.
- Solve problems that involve properties of angles and triangles.

- Solve problems that involve the cosine law and the sine law, excluding the ambiguous case.
- Analyze and prove conjectures using inductive and deductive reasoning to solve problems.
- Analyze puzzles and games that involve spatial reasoning using problem solving strategies.
- Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands (limited to square roots).
- Solve problems that involve radical equations (limited to square roots or cube roots).
- Demonstrate an understanding of the characteristics of quadratic functions, including
 - o vertex
 - o intercepts
 - o domain and range
 - o axis of symmetry
- Solve problems that involve quadratic equations.

Evaluation

Assignments	28%
Tests	30%
Quizzes	12%
Attendance/Participation	5%
Final Exam	25%
Total	100%

The minimum pre-requisite for progression is 1.7 (refer to Grading System below)

Grading System

A min grade of 60% is required for progression.

Descriptor	4.0 Scale	Percent
	4.0	96 – 100
Excellent	4.0	90 – 95
	3.7	85 – 89
	3.3	81 – 84
Good	3.0	77 – 80
	2.7	73 – 76
	2.3	69 – 72
Satisfactory	2.0	65 – 68
Minimum Prerequisite	1.7	60 – 64
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 - 49

Proposed Schedule of Topics

Time allotted	Topic
2 weeks	Chapter 5: Statistics
2 weeks	Chapter 2: Properties of Angles & Triangles
1.5 weeks	Chapter 3: Acute Triangle Trigonometry
2 weeks	Chapter 4: Radicals
2 weeks	Chapter 6: Quadratic Functions
1.5 weeks	Chapter 7: Quadratic Equations
1.5 weeks	Chapter 8: Proportional Reasoning

A detailed schedule with assignment due dates is attached at the end of this course outline

Please Note:

Date and time allotted to each topic is subject to change.

Course Policies and Procedures

Assignments. There will be end of unit graded assignments (worth 28% of your grade) and daily practice textbook exercises (worth 5%) of your grade. Daily textbook practice will be graded for completion and will submitted weekly. Check the course schedule for assignment due dates.

Assignment Submission. All assignments must be submitted via the moodle assignment drop box as a single PDF file (submit only one file per assignment). If you need help formatting your assignment, make an appointment with the college's educational support specialist (located in the library).

Participation Marks. Participation marks will be awarded based on the completion of daily textbook practice assignments. Textbook practice assignments will be submitted weekly via a moodle dropbox.

Late assignments. Students will lose 5% the first day that an assignment is late, after day one an additional 10% per day will be deducted until day 5. After day 5 the assignment will no longer be accepted and students will receive a zero for the assignment. Late assignments will have minimal feedback so if written feedback is important to you make sure that you submit assignments on time.

Midterm Exam. A missed exam may be written at an alternate time only under certain exceptional circumstances and *at the instructor's discretion*. The instructor should be contacted within 24 hours of the scheduled exam, and acceptable documentation (e.g. a doctor's note) must be provided.

Final Exam. The final exam schedule and policy is available on the Keyano College website. It is your responsibility to be familiar with final exam policy. Final exams must be written on the date scheduled by the College. If there are extenuating circumstances the procedure for "Deferred Final Examination" in the Credit Calendar is to be followed.

Please avoid scheduling appointments during class time. Lab assignments and exams will not be excused or omitted due to missing class for personal appointments. This includes routine medical appointments, volunteer or work commitments, and college related appointments. However, if you have extenuating circumstances, contact your instructor.

Electronic Devices. Students should only engage in the use of personal laptop computers, tablets or iPads, and/or cellphones for course related purposes. The use of these devices for anything that is not course related is prohibited. Cellphones and tablets are strictly prohibited during guizzes and exams.

Make-up assignments and Extra Credit will NOT be given in this course. If you are unable to meet assignment deadlines contact your instructor <u>2 days prior</u> to the due date. Requests for extensions after the due date will not be considered unless there are extenuating circumstances.

Performance Requirements and Student Services

Student Responsibilities

It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College credit calendar.

More specific details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due (see item 4.d., above, in Course Policies and Procedures).

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism: to present another person's ideas, writing, artistic work, drawings, images, data, etcetera, as one's own (zero tolerance for plagiarism)
- Presenting another person's substantial writing changes/edits to an assignment/essay on a handed-in assignment that you claim to have written (plagiarism)
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration (working together) with others in preparing work and then handing in the assignment/essay as if it was your own (plagiarism)
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment or class (plagiarism)
- Breach of confidentiality
- Copying/cutting and pasting, paraphrasing, or summarizing another person's work (including information found on the Internet and unpublished materials) without proper referencing (plagiarism). Proper referencing must include providing proper citations (see MLA 8th Edition style guide/resources available from the College Library or in the required texts/PDFs for the course)

Proper quoting, paraphrasing, and summarizing of another person's (source's) work along with providing an in-text citation and Works Cited page for your source(s) is a key part of avoiding plagiarism.

The consequences for academic misconduct range from a verbal reprimand to receiving zero on the assignment/essay to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

To ensure your understanding of the concept of plagiarism, read the course PDFs and check with your instructor, if you have any questions.

Specialized Supports

The Student Services Department is committed to Keyano students and their academic success. There are a variety of student supports available at Keyano. Due to the continuing situation with the Covid-19 pandemic, the offered support services will be implemented through a model to respond to the restrictions in force at the time. In-person and virtual services will be offered. All Alberta Health Services guidelines will be followed for inperson appointments—wear a mask, maintain two meters of physical distance, use hand sanitizer, and stay home if you are unwell.

All student services are available during Keyano business hours: Monday to Friday, 8h30-16h30. The College is closed for statutory holidays. If you require support outside of regular business hours, please inform the support service team, and we will do our best to accommodate your needs.

Accessibility Services: provides accommodations for students with disabilities. Students with documented disabilities, or who suspect a disability, can meet with a Learning Strategist to discuss their current learning barriers and possible accommodations. Students who have accessed accommodations in the past are encouraged to contact us to request them for the semester. Please note that requesting accommodations is a process and requires time to arrange. Contact us as soon as you know you may require accommodations. For accessibility supports and to book an appointment, please contact accessibility.services@keyano.ca.

Accessibility Services also provides individual and group learning strategy instruction for all students, as well as technology training and supports to enhance learning. Meet with a Learning Strategist to learn studying and test-taking strategies for online classes. Schedule an appointment with the Assistive Technology Specialist to explore technology tools for learning. Book an appointment today by emailing accessibility.services@keyano.ca

Wellness Services: offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators offer a safe and confidential environment to seek help with personal concerns. Students may access services virtually and inperson.

Wellness Services welcomes students to participate in any of the group sessions offered throughout the academic year addressing topics including mindfulness and test anxiety.

Individual appointments can be made by emailing wellness.services@keyano.ca.

Library Services: provides students with research and information supports as they engage in their studies. Library staff are available to support you both online and in-person throughout the semester. For a detailed list of library supports and services, go to www.keyano.ca/library. For all inquiries, please email askthelibrary@keyano.ca or chat with us online.

Begin your research with the <u>Library's FIND page</u>. Search for information and sources for your assignments using the OneSearch, the Library's Catalogue, or by searching in a specific database selected from the <u>A-Z Database List</u>.

Individual support with us is available. For support with citations, research and other information needs, appointments can be booked using the online <u>Book A Librarian Calendar</u>. For support with Moodle, educational tools for assignments, Microsoft Office, Zoom, Teams and more, book an appointment using the online <u>Educational Technology Support Calendar</u>.

Research and subject guides are helpful resources when beginning your research, assignment, using new educational technology, or addressing other information needs. To view a subject or course-specific guide, check out the complete listing of online <u>Subject Guides</u>.

To access additional research resources, including Citation Guides (APA, MLA, Chicago, or IEEE), go to the Research Help Library page.

The Loanable Technology collection is available to support students in their learning pursuits, whether online, in person or both. Items available for borrowing include mobile projectors, webcams, noise-cancelling headphones, Chromebooks, and laptops. For an up-to-date list of technology available for borrowing as well as support available, go to the Library's Loanable Technology webpage.

Academic Success Centre: The Academic Success Centre is a learning space in the Clearwater Campus (CC-119) at Keyano College. Students can gather to share ideas, collaborate on projects, get new perspectives on learning from our Academic Content Specialists, or use the Centre's educational resources. The Academic Success Centre provides academic support services to students registered in credit programs at Keyano College in the form of individual tutoring, writing support groups, facilitated study groups, workshops, and study space. Services are **free** to Keyano students.

Academic Content Specialists are available in the areas of Math, Science, Human Services, and English/Humanities. This covers all courses offered at Keyano. The Academic Success Coach can also be found in the Academic Success Centre.

For the most up to date information on how to book a session, please view the Keyano Academic Success Centre homepage.

Academic Integrity: The goal of the Academic Success Centre is to foster a student's ability to learn effectively and independently. Students registered at Keyano College are welcome to drop by the Centre to visit with any of our Academic Content Specialists to discuss their academic concerns.

Availability: Monday to Friday: 8:30 a.m. – 4:30 p.m. Flexible times may be available upon request. Virtual and in-person sessions, please email to get in contact with our Academic Content Specialists. For the most up to date information on how to book a session, please view the <u>Academic Success Centre</u> homepage.

Academic Success Coach: offers you support and access to resources for your academic success to help you to find the Keys to your Success. The Academic Success Coach will work with you to develop an academic success plan, develop your study and time management skills, and connect you with the right resources here at Keyano. <u>Academic.success@keyano.ca</u> is the best way to access resources during blended service delivery. The Academic Success Coach is located in the Skill Centre in CC-119 at the Clearwater Campus.

E-Learning

Technology and internet will impact your online learning experience. It's important that you can watch an online video and other course materials, take online quizzes and participate in a live class with your instructor and other students. Live/virtual classes will be hosted in Microsoft Teams or Zoom.

For all course delivery types, you will access your course resources on Keyano's learning management system, **Moodle (iLearn).** Login in using your Keyano username and password.

Keyano College operates in a Windows based environment, and having the correct tools for online learning is important. Here's a list of recommended system requirements.

If you need assistance with moodle or preparing files to be uploaded to moodle contact the college's educational support technologist:

Kelly Keus, Educational Support Technologist

Office: CC168B (In the Library)

Phone: 780.791.8910

Email: kelly.keus@keyano.ca

You can book a help session online for in-person or online assistance via the link (select Educational Technology Support): https://keyano.libcal.com/appointments/Library

Internet Speed

Minimum Internet speeds of 10 Mbps.

Recommended Internet speeds of 25 Mbps (especially if you are sharing your internet at home). Check your internet speed with Fast.com.

Computer Software

Students will be able to get access to Microsoft Office 365 for free using Keyano credentials by clicking here.

Recording of Lectures and Intellectual Property

Students may only record a lecture if explicit permission is provided by the instructor or by Accessibility Services. Even if students have permission to record a lecture or lecture materials, students may not share, distribute, or publish any of the lectures or course materials, this includes any recordings, slides, instructor notes, etc. on any platform. Thus, no student is allowed to share, distribute, publish or sell course related content (instructor, or students) without permission. It is important to recognize that the Canadian Copyright Act contains provisions for intellectual property. The <u>Academic Integrity Policy</u> provides additional information on Keyano College's expectations from students as members of the intellectual community.

ITS Helpdesk

If you are having issues with your student account, you can contact the ITS Helpdesk by emailing its.helpdesk@keyano.ca or calling 780-791-4965.

System requirements are on the next page

System requirements:

Microsoft Windows

Minimum Requirements:

A Windows 10 computer/laptop

- · Minimum 4GB of RAM.
- 10GB+ available hard drive storage.
- Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). <u>Microsoft Office</u> software is free to all Keyano students and employees.
- · Microphone, webcam and speakers. A headset with a microphone is recommended.
- System updates must be regularly installed.
- · Anti-Virus / Anti-Malware software

Minimum Requirements:

A Macintosh (V10.14 and above) **computer/laptop**

- Minimum 4GB of RAM.
- · 10GB+ available hard drive storage.
- Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). <u>Microsoft Office</u> software is free to all Kevano students and employees.

Apple

- · Microphone, webcam and speakers. A headset with a microphone is recommended.
- · System updates must be regularly installed.
- Anti-Virus / Anti-Malware software.

Recommended Requirements

- · 8GB of RAM
- · A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free.

Recommended Requirements

- 8GB of RAM
- · A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free.

Chromebooks are **not** recommended as they are not compatible with testing lockdown browsers. A Microsoft Surface or iPad or iPad Pro may be possible alternatives in some program areas.

See next page for the Course schedule with assignment and exam dates

Unit 1: Properties of Angles and Triangles (Ch 2 and 3)

Date	Topic	Practice Assignments (For Completion Marks)	Quiz and Assignments Dates (Graded with feedback)
Tues Jan 4	Angle, Triangle, and Trig Review	Moodle quiz	
Wed Jan 7	2.1: Exploring Parallel Lines	Pg. 72 #2, 5 Moodle Quiz 2.1: Questions 1 to 5 (repeat until you get 100%)	
Mon Jan 10	2.2: Angles Formed by Parallel Lines	Pg. 78 # 1, 2, 3, 4, 8, 15, 20 (help for #15 and #20 is in moodle)	
Tues Jan 11	2.3: Angle Properties in Triangles	Page 90-92 # 3, 4, 5, 6, 7, 9, 10, 11, 14, 15	Quick Quiz 2.1 & 2.2 (To study practice Pg. 85 #1 & 5)
Fri Jan 14	2.4: Angle Properties in Polygons	Page 99 #s 1-3, 6, 7, 11, 17	
Mon Jan 17	2.5: Congruent Triangles	Complete Page 106 #s 1-3. Work on ch2 assignment	Quick Quiz on 2.4
Tues Jan 18	3.1: Side-Angle Relations	Page 131 #2,4 Page 138 # 1,2,3ab Work on ch2 assignment	Chapter 2 Assignment Due Thursday Jan 20, by midnight Submit as PDF file in moodle
Fri Jan 21	3.2: Proving and applying the SIN Law	Page 139-141 #s 4, 5, 10, 13, 15 3.1 Check up Practice Moodle Quiz (repeat until you get 100%)	
Mon Jan 24	3.3: Proving and applying COSINE Law	Page 150 to 153 #s 1, 4, 5, 6, 7	
Tues Jan 25	3.4: Solving Problems using acute triangles	Practice Page 161 #1, 3, 4, 6,	Quick Quiz (3.2-3.3)
Friday Jan 28	6.1: Exploring Quadratic Relations	Page 324 # 1-5	Chapter 3 Assignment Due Thursday Jan 27, by midnight
Mon Jan 31	6.2: Properties of Graphs Quadratic Functions	Page 332 #s, 1, 2, 3, 4, 5, 6, 9, 11, 13, 14.	
Tues Feb 1	If you miss your exa	Unit Exam (Ch 2 and 3) Written Dum it may result in a grade of 0. Sleeping NOT an appropriate reason for missir	or a conflicting work schedule in is

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Unit 2: Quadratic Functions and Equations

TI-84 or TI-83 Graphing Calculator is required for this unit

Date	Topic	Practice Assignments (For Completion Marks)	Quiz and Assignments Dates (Graded with feedback)	
Fri	6.1: Evaloring	Page 324 # 1-5	(Graded with reedback)	
Jan 28	6.1: Exploring Quadratic Relations	Fage 324 # 1-3		
Mon Jan 31	6.2: Properties of Graphs Quadratic Functions	Page 332 #s, 1, 2, 3, 4, 5, 6, 9, 11, 13, 14.		
Tues Feb 1		Unit Exam (Ch 2 and 3) Written I	Ouring Class	
Fri Feb 4	Factoring Review 1	Handout in moodle	Quiz 6.1 and 6.2	
Mon Feb 7	6.3: Factored Form of Quadratic Function	Page 346 #s 1-5, 9,10, 11,13		
Fri Feb 11	6.4: Vertex Form of a Quadratic Function	Page 361 #s 1, 2, 3, 4, 5, 6, 11, 13, 14		
Mon Feb 14	6.5: Solving Problems with Quadratic Function Models	TBD	Quiz 6.1 to 6.5	
Tues Feb 15	7.1: Solving Quadratic Equations by Graphing	Page 402 #s 1-4, 8, 9, 12		
Fri Feb 18	7.2: Solving Quadratic Equations by Factoring	Page 411 #s 1-7, 14, 16	Chapter 6 assignment Due Tuesday Feb 22 (during reading week so plan ahead if needed)	
	No classes Feb 21 to Feb 25			
	College and academic success center is open Feb 22 to 25			
Mon Feb 28	7.3: Solving Quadratic Equations with the Quadratic Formula	Page 419 #'s 1-5, 7, 10	Quiz 7.1 to 7.2	
Tues Mar 1	7.4	TBD	Chapter 7 assignment Due Thursday March 3	
Fri Mar 4	5.1 Stats Intro			
Mon Mar 7	5.2 STATS Unit			
Tues Mar 8		CH 6 and 7 EXAM		

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Unit 3: Chapter 5 Statistical Reasoning

Date	Topic	Practice Assignments (For Completion Marks)	Quiz and Assignments Dates (Graded with feedback)
Fri Mar 4	5.1: Exploring Data	Page 239-240 #s 1b; 2a,b,c; 3a,b 5.1 Calculator Extra practice	(Graded Will recubusly
Mon Mar 7	5.2: Frequency Tables, Histograms, Frequency Polygons	Handout Print and bring to class	
Tues Mar 8		CH 6 and 7 EXAM	
Fri Mar 11	5.3: Standard Deviation	Page 261-265, # 1, 4, 5, 6, 9, 10	
Mon Mar 14	5.4: The Normal Distribution	Page 279 #s 1, 3, 4, 6, 9, 10, 12, 13	Quick Quiz (5.1 - 5.2) Ch5 Assignment Due Thur Mar 17
The CH5 exam will be combined with the CH4 exam. Exam Date Mon April 4			

Unit 4: Chapter 4 Radicals (Ch4)

Date	Topic	Practice Assignments (For Completion Marks)	Quiz and Assignments Dates (Graded with feedback)
Tues Mar 15	4.1: Mixed and Entire Radicals	Page 182 and questions #s 4, 5, 10, 11, 12	Chapter 7 Assignment Due Friday
Fri Mar 18	4.2: Adding and Subtracting Radicals	Page 188 #s, 1-7, 9, 14, 16	
Mon Mar 21	4.3: Multiplying and Dividing Radicals	Page 198-200 #s 1, 2, 4, 5, 9, 10, 11, 13, 14, 16, 17	Quiz 4.1 and 4.2
Tues Mar 22	4.4: Simplifying Radical Expressions	Page 211 to 213 #s 1, 2, 3, 4, 8, 9, 10, 11, 12, 13, 15	
Fri Mar 25	4.5: Radical Equations	Page 215 #s 1, 2, 3,4	
Mon Mar 28	4.6: Solving Radical Equations	Page 222, #s 1, 2, 3, 4, 5, 6, 7, 11, 13	Quiz 4.3 and 4.4 Chapter 4 Assignment Due Thurs Mar 31
Tues Mar 29	8.1	Page 450-452. #s1-7, 8, 10, 11, 12,13	
Fri Apr 1	8.2	Page 458-461 #s 1-4, 7, 8, 9, 12, 13, 15	
Mon Apr 4	Ch 4 and 5 Exam Mon April 4		

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Unit 5: Proportional Reasoning (Ch 8)

Date	Topic	Practice Assignments (For Completion Marks)	Quiz and Assignments Dates (Graded with feedback)
Tues Mar 29	8.1 Comparing and Interpreting Rates	Page 450-452. #s1-7, 8, 10, 11, 12,13	
Fri Apr 1	8.2 Rate Problems	Page 458-461 #s 1-4, 7, 8, 9, 12, 13, 15	
Mon Apr 4	8.3: Scale Factor	Page 471-474 # 1, 2, 4, 6, 8, 11, 12	8.1 and 8.2 Quiz
Tues Apr 5	8.4: Scale Diagrams (2D area)	479 # 1-3, 6, 7, 8, 13	
Fri Apr 8	8.5: Scale models (3D volume)	TBD	
Mon Apr 11	TBD		CH8 Assignment Due Sun April 10
Tues April 12	Review		

Save the DATE: Final Exam Week April 19-27

(Final Exam Schedule is created by the college, not myself)

Once finalized the exam schedule will be available online here: https://www.keyano.ca/en/student-services/examinations.aspx

Students who are unable to comply with the established dates and times for final exams must apply for an exam deferral. Valid reasons for deferral include:

- 1. Bereavement
- 2. Personal illness or injury
- 3. Religious observances
- 4. Domestic affliction
- 5. Disability
- 6. Final Exams scheduled concurrently

Documentation (medical certificate, death certificate, accident report, etc.) will be required to support a deferral request. All medical documentation must be provided to Health Services for verification.

Application for deferral must be made prior to the examination or within 48 hours of the formal scheduled time. Note: There is a fee and there are 3 levels of approval required for final exam deferrals: instructor, Chair, and Office of the Registrar.