Submit original with signatures + 1 copy + electronic copy to Faculty Senate (Box 7500).
See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/ *for a complete description of the* rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

Department	**Mathematics & Statistics**	College/School	CNSM

Prepared by	**Leah Berman**	Phone	907-474-7123

Email Contact	**lwberman@alaska.edu**	Faculty Contact	**Leah Berman**

1. ACTION DESIRED
(CHECK ONE): Trial Course ☐   New Course ☒ x

2. COURSE IDENTIFICATION: Dept **MATH**   Course # **6XX**   No. of Credits **3**

Justify upper/lower division status & number of credits:	Graduate course; meets 3 hours a week

3. PROPOSED COURSE TITLE: Topics in Geometry

4. To be CROSS LISTED?
YES/NO NO   If yes, Dept: Course #

NOTE: Cross-listing requires approval of both departments and deans involved. Add lines at end of form for additional required signatures.

5. To be STACKED?
YES/NO NO   If yes, Dept.   Course #

How will the two course levels differ from each other? How will each be taught at the appropriate level?:	

Stacked course applications are reviewed by the (Undergraduate) Curricular Review Committee and by the Graduate Academic and Advising Committee. Creating two different syllabi—undergraduate and graduate versions—will help emphasize the different qualities of what are supposed to be two different courses. The committees will determine: 1) whether the two versions are sufficiently different (i.e. is there undergraduate and graduate level content being offered); 2) are undergraduates being overtaxed?; 3) are graduate students being undertaxed? In this context, the committees are looking out for the interests of the students taking the course. Typically, if either committee has qualms, they both do. More info online – see URL at top of this page.

6. FREQUENCY OF OFFERING: Fall even years

Governance
11/12/14   TLP

Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or
As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING
(AY2013-14 if approved by 3/1/2013; otherwise
AY2014-15)

Fall 2016

8. COURSE FORMAT:
NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, **any core course compressed to less than six weeks must be approved by the Core Review Committee.**

COURSE FORMAT:
(check all that apply)

| | 1 | | 2 | | 3 | | 4 | | 5 | X | 6 weeks to full semester |

OTHER FORMAT (specify)

Mode of delivery (specify
lecture, field trips, labs, etc)   **lecture**

9. CONTACT HOURS PER WEEK:

| 3 | LECTURE hours/weeks | | LAB hours /week | | PRACTICUM hours /week |

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/guidelines-for-computing-/ for more information on number of credits.

OTHER HOURS (specify type)

10. <u>COMPLETE</u> *CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):*

Example of a <u>complete</u> description:

FISH F487 W, O   Fisheries Management
  3 Credits   Offered Spring
  Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. *Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; or permission of instructor.* Cross-listed with NRM F487. (3+0)

MATH 6XX Topics in Geometry
3 credits, Offered Fall even numbered years
Elective topics in geometry. Recent offerings have included configurations of points and lines; topology and differential geometry of surfaces; polyhedra and polytopes. Prerequisites: graduate standing or permission of instructor. Recommended: Linear algebra, geometry, undergraduate real analysis, undergraduate abstract algebra.

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11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

H = Humanities   S = Social Sciences

Will this course be used to fulfill a requirement
for the baccalaureate core? **If YES, attach form.**   **YES:**   **NO:**   X

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, **Format 6**   W = Writing Intensive, **Format 7**   X = Baccalaureate Core

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11.A Is course content related to northern, arctic or circumpolar studies? If yes, a   "snowflake" symbol will be added in the printed Catalog, and flagged in Banner.

YES   **NO** X

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12. COURSE REPEATABILITY:
Is this course repeatable for credit?   **YES** X   **NO**

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

The topics covered in the course will change with each offering.

How many times may the course be repeated for credit? | 1 | **TIMES**

If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course? | 6 | **CREDITS**

If the course can be repeated with <u>variable</u> credit, what is the maximum number of credit hours that may be earned for this course? | | **CREDITS**

13. GRADING SYSTEM: *Specify only one. Note: Changing the grading system for a course later on constitutes a Major Course Change – Format 2 form.*

LETTER: | X |

PASS/FAIL: | |

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES | *graduate standing or permission of instructor*

These will be *required* before the student is allowed to enroll in the course.

15. SPECIAL RESTRICTIONS, CONDITIONS | |

16. PROPOSED COURSE FEES | $ |

Has a memo been submitted through your dean to the Provost for fee approval?
Yes/No | |

17. PREVIOUS HISTORY
Has the course been offered as special topics or trial course previously?
Yes/No | Y |

If yes, give semester, year, course #, etc.: | Fall 2010 (as Math 665: Configurations, and as MATH 665: Theory of Surfaces), Fall 2012 (as Math 665: Polytopes), Fall 2014 (as Math 665: Configurations of points and lines)

18. ESTIMATED IMPACT
WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

We plan on teaching this course as part of our regular rotation of graduate electives.

19. LIBRARY COLLECTIONS
Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No [ ]   X [X] Yes [ ]   [ ]   Current library offerings are adequate.

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20. IMPACTS ON PROGRAMS/DEPTS

What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)

This will enhance the elective choices for our graduate students and will regularize current practice.

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21. POSITIVE AND NEGATIVE IMPACTS

Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.

Negative impacts include reducing the number of full-time faculty members available to teach lower-level courses during the semester this course is offered. However, in practice, offerings of the Topics in Geometry course simply replace previous offerings of the Graduate "topics" course, and will not transfer net faculty load towards graduate courses. Positive impacts include strengthening our graduate mathematics program.

JUSTIFICATION FOR ACTION REQUESTED
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.
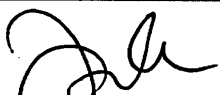
Having a graduate geometry course will allow graduate students to expect electives regularly on various topics in geometry (e.g., discrete geometry, differential geometry) which will allow faculty to teach courses in their area of specialization. We have several faculty whose research areas are in discrete geometry, differential geometry, or are related to discrete geometry (e.g., graph theory). This course will help fill out our revised graduate course matrix, allowing us to offer at least three graduate courses per semester (roughly one each in core graduate courses, pure mathematics, and applied mathematics topics; the topics in geometry would be a pure offering.)

While the topics for the course may change, the syllabus attached to this course offering will remain the same in structure; only the content will change. In particular, the descriptions of the frequency and type of homework, exams, and other assessments in the course, as well as the percent of the grade associated with each type of assessment, will be similar to the attached syllabus.
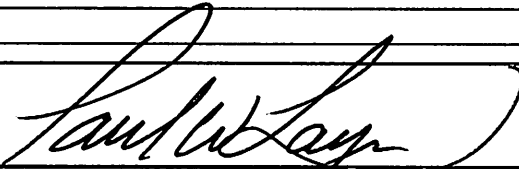
APPROVALS: Add additional signature lines as needed.

| | Date | 10/13/14 |

Signature, Chair, Program/Department of: | DMS

| | Date | 11-10-14 |

Signature, Chair, College/School Curriculum Council for: | CNSM

| | Date | 11/11/14 |

Signature, Dean, College/School of: | CNSM

Offerings above the level of approved programs must be approved in advance by the Provost.

| | Date | |

Signature of Provost (if above level of approved programs)

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

| | Date | |

Signature, Chair
Faculty Senate Review Committee: ___Curriculum Review   ___GAAC

___Core Review   ___SADAC

ATTACH COMPLETE SYLLABUS (as part of this application). This list is online at:
http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/uaf-syllabus-requirements/
The Faculty Senate curriculum committees will review the syllabus to ensure that each of
the items listed below are included. If items are missing or unclear, the proposed course
(or changes to it) may be <u>denied</u>.

Syllabus CHECKLIST for all UAF courses
During the first week of class, instructors will distribute a course syllabus. Although modifications may be
made throughout the semester, this document will contain the following information (as applicable to the
discipline):

1. Course information:
θTitle, θ number, θcredits, θprerequisites, θ location, θ meeting time
(make sure that contact hours are in line with credits).

2. Instructor (and if applicable, Teaching Assistant) information:
θ Name, θ office location, θ office hours, θ telephone, θ email address.

3. Course readings/materials:
θ Course textbook title, θ author, θ edition/publisher.

θ Supplementary readings (indicate whether θ required or θ recommended) and

θ any supplies required.

4. Course description:
θ Content of the course and how it fits into the broader curriculum;

θ Expected proficiencies required to undertake the course, if applicable.

θ Inclusion of catalog description is *strongly* recommended, and

θ Description in syllabus must be consistent with catalog course description.

5. θ Course Goals (general), and (see #6)

6. θ Student Learning Outcomes (more specific)

7. Instructional methods:

θ Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

8. Course calendar:

θ A schedule of class topics and assignments must be included. <u>Be specific</u> so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

9. Course policies:

θ Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

10. Evaluation:

θ Specify how students will be evaluated, θ what factors will be included, θ their relative value, and θ how they will be tabulated into grades (on a curve, absolute scores, etc.) θ Publicize UAF regulations with regard to the grades of "C" and below <u>as applicable</u> to this course. (Not required in the syllabus, but is a convenient way to publicize this.) Link to PDF summary of grading policy for "C":

<u>http://www.uaf.edu/files/uafgov/Info-to-Publicize-C_Grading-Policy-UPDATED-May-2013.pdf</u>

11. Support Services:

θ Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

12. Disabilities Services: Note that the phone# and location have been **updated.** <u>http://www.uaf.edu/disability/</u> The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials.

θ State that you will work with the Office of Disabilities Services (208 WHITAKER BLDG, 474-5655)to provide reasonable accommodation to students with disabilities.

5/21/2013

MATH 6xx: Topics in Geometry (Configurations) Fall 201x

Instructor: Dr. Leah Berman

Office: Chapman 303A

Office Phone: 907-474-7123

Cell Phone: 907-347-4021 (don't call after 9 PM)

e-mail: lwberman@alaska.edu (best way to contact me!)

AIM screen name: leahwrenn

Classroom and class meeting times: Reichardt 165, MWF, 10:30 – 11:30 AM.

Office hours: MWF 2-3 PM, Th 10 – 11AM, and by appointment. To make an appointment, just drop me an e-mail. You are also welcome to stop by my office at any time and see if I am free (even without a scheduled appointment); however, there is a possibility that I may be busy/away if you haven't set up an appointment. These office hours are subject to change.

Prerequisites: Graduate standing or permission of instructor. **Recommended:** Linear algebra, undergraduate abstract algebra, geometry.

Course description, goals, student learning outcomes: A (p_q, n_k) combinatorial configuration is a collection of p objects, called "points" and n collections of points, called "lines", so that each point is contained in q lines, and each line contains k points. If the combinatorial configuration may be constructed so that the "points" are really points in some Euclidean space, typically $\mathbb{E}^2$, and the "lines" are straight lines (or pseudolines) in that space, then the resulting object is a geometric configuration. We will study some of the history of configurations and then focus on recent, active areas of study, especially of geometric (n_k) configurations.

Required Text: Branko Grünbaum. *Configurations of Points and Lines* AMS, 2009.

Required Software:

- *The Geometer's Sketchpad.* Available from Key Curriculum Press, www.keypress.com

- *LaTeX*. If you use a Macintosh, TeXShop is a great editor, and it's free. For Windows, TeXnicCenter is at least free. Talk to me if you need help.

Recommended Software: Some computer algebra system. *Mathematica* is the software I use. Available from www.wolfram.com, and there's student pricing available.

Instructional methods:

Lecture: Class meets three times a week; these will be primarily active lectures, supplemented with the occasional in-class worksheet. You are expected to participate in the lecture by asking questions! I will call on people at random during class.

Homework and labs: Written homework will be assigned on a weekly basis; it will be listed on Blackboard, and you will be responsible for checking on a regular basis. Due dates will be as assigned.

You are **very strongly encouraged** to collaborate with your classmates. However, you are expected to write up solutions to homework problems yourself.

1

Exams: There will be one mid-semester exam, tentatively scheduled for Friday, October ??, 20?? and one final exam, scheduled from XX:XX – XX:XX on XX, December XX, 20XX (the scheduled final exam period). Both exams will have an in-class component and a take-home component; the take-home exam will emphasize problem solving whereas the in-class exam will emphasize familiarity with definitions, theorems, and basic results. There will be a final project, due by NOON on Wednesday, December 6 (the last day of classes).

Final Project: Your final project consists of two parts:

(1) A paper addressing some interesting question in configurations. You have two options:

A research paper: In this paper, you investigate a constrained problem in configurations, doing original research. Your topic should not be too broad.

An expository paper: For this option, you write a survey paper/expository paper in which you explain other people's work concerning some constrained area of configurations research.

(2) A 10–12 minute presentation, in which you distill the contents of your paper and make it accessible to your peers.

Your final project presentation will occur during the last week of classes; details TBA. Further details about the final project (e.g., milestones, deliverables, assessment rubrics) will be distributed separately.

Tentative schedule:

Week	topics
1	introduction, §1.1 – 1.3
2	§1.4, 1.5
3	§1.6, 1.7, 1.8
4	§2.1, 2.2
5	§2.3 – 2.5
6	geometric constructions of 3-configurations
7	more constructions for 3-configurations
8	4-configurations: §3.1 – 3.3
9	celestial 4-configurations; §3.4 – 3.6
10	highly incident configurations: new construction I
11	highly incident configurations: new construction II
12	floral configurations
13	recent results; project presentations
14	Final Exam

Course Policies:

e-mail: *You are responsible for checking your* alaska.edu *e-mail account every day before class.* This is the e-mail address I have access to, and this is what I will use to get in touch with you. If you don't typically check it, then set it up to forward to your main account.

Absences and make-ups: You are expected to attend every class. Missing classes will have an adverse effect on your course grade. *If you miss more than six classes, or if you do not show up to take an exam, I may withdraw you from the course.*

If you must miss class, you are responsible for notifying me ahead of time to make appropriate arrangements. Except in unusual circumstances, make-up quizzes and exams will not be given.

Illness: Please do not come to class if you are possibly contagious. If you are too sick to come to class, please e-mail me **BEFORE CLASS**.

Announcements: From time to time, announcements and comments will be sent out via e-mail. **It is your responsibility to check your e-mail account to receive this information.**

Evaluation:

Homework	40%
Midsemester Exam	20%
Final Exam	25%
Final project	15%

To get a rough sense of how numerical grades correspond to letter grades:

% cutoff	letter grade	% cutoff	letter grade	% cutoff	letter grade	% cutoff	letter grade
60	D-	70	C-	80	B-	90	A-
63	D	73	C	83	B	93	A
67	D+	77	C+	87	B+	97	A+

Support Services: You are strongly encouraged to attend office hours if you have questions, or e-mail/instant message me. I also encourage you to work with other students where appropriate.

Disabilities Services: The Office of Disability Services implements the Amreicans with Disabilities Act (ADA) and insures that UAF students have equal access to the campus and course materials. I will work with the Office of Disability Services (203 WHIT, 474-7043) to provide reasonable accomodation to students with disabilities. Please come talk to me as soon as possible if you have/need accomodations.