

# Math 1020

## Math In Art

### Additional Information

Instructor: Sasho Kalajdzievski  
Office: 434 Machray Hall  
Email: [sasho@umanitoba.ca](mailto:sasho@umanitoba.ca)  
Phone: 474 6929  
Office hours: Tuesdays 2:30-3:30, or by appointment

Web pages for this course.

<http://server.math.umanitoba.ca/~sasho/>

The main page: contains links. One click away is

<http://server.math.umanitoba.ca/~sasho/CurentCourses/00courses.html>

This is a hub with links to old and new courses

One more click and you are looking at

[http://server.math.umanitoba.ca/~sasho/CurentCourses/Math\\_Art\\_fall\\_2019/MathInArt\\_fall\\_2019.html](http://server.math.umanitoba.ca/~sasho/CurentCourses/Math_Art_fall_2019/MathInArt_fall_2019.html)

This is a page dedicated to this course, this section. Contains illustration, a few movies and handouts. Solutions of the midterm exam problems, as well as the results will be posted here.

<http://webware.cc.umanitoba.ca:8080/webMathematica/Files/MathInArt.html>

WebMathematica Page: contains applets for real-time manipulation and drawing of various objects (fractals, tilings etc.)

Material covered (refer to the textbook):

Section	Pages	Suggested Problems
1.1. Euclidean Geometry	1-6	
1.2. Euclidean Constructions	6-14	1-8
1.3. Golden Ratio	14-24	1-11
1.4. Fibonacci numbers	24-31	1-6
2.1. Plane Symmetries	33-42	1-9
2.3. Groups of Symmetries	55-60	1-7
2.4. Frieze Patterns (part)	61-72	1-3
2.5. Wallpaper designs; Tilings (part)	72-81	
2.6. Tilings and Art (part)	81-89	
3.1. Similarities	91-100	1-7
3.3. Fractals (part)	100-123	1-4
3.4. Julia Sets (part)	123-131	1-3
4.1. Non-Euclidean Geometries	143-146	
4.2. Inversion	146	
4.3. Hyperbolic Geometry	153-158	
4.4. Hyperbolic Constructions	158-163	1-7
4.5. Tilings in Hyperbolic Plane (part)	163-167	
5.1. Perspective	169-181	1-9
5.3. Polyhedra (part)	197-206	1-4
5.4. Conic Sections (part)	206-216	1-6
6.1. Homotopy	223-230	1-6
6.2. Two-Manifolds and Euler (part)	230-237	1-6
6.3. Other Manifolds (overview only)	237-247	