

62-210 Stars, Kites and Darts: A primer on Islamic geometric designs

Fall Semester 2020 • 3 units • Doha • (REMOTE)

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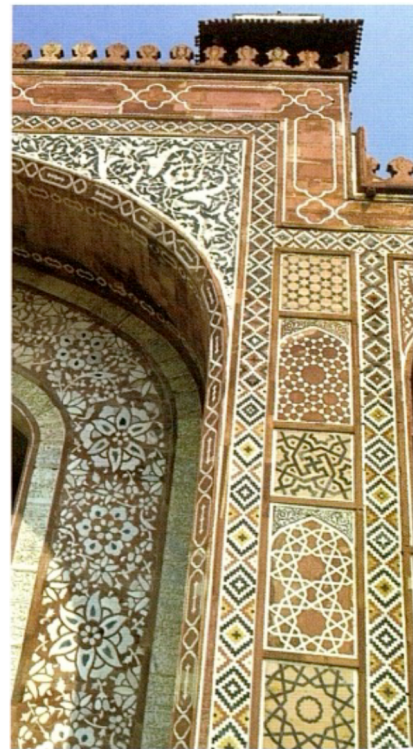
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Course open to all undergraduates in CMU-Q

COURSE DESCRIPTION

Geometric designs and patterns feature prominently in the Islamic world and it is the primary subject of interest in this course. The title of this micro-course takes its name from the dominant geometric figures found in Islamic style patterns, tilings, and designs, in which is provided an overview of geometric designs across various Islamic cultures, their symmetries explored, their compositional styles classified, and the constructive composition of representative examples demonstrated. Student assignments mirror these exercises and include simple compositional analyses and developing an Islamic design of their own.

When this course is offered in Doha, it will include a visit to a local museum.



Inspiration from the land of my birth

LEARNING OUTCOMES

In this course students will:

- Develop an appreciation of the historical development of Islamic geometric designs
- Explore the geometry and symmetries of Islamic designs
- Be able to construct and design basic Islamic-style patterns
- Develop a sensibility for Islamic designs.

COURSE TOPICS

To quote Daud Sutton (2007) in *Islamic Design: A Genius for Geometry*

“Throughout their long history the craft traditions of the Islamic world evolved a multitude of styles applied to a great variety of media but always with unifying factors that make them instantly recognizable. Harmony is central. There are two key aspects to the visual structure of Islamic design, calligraphy ... and **abstract ornamentation using a varied but remarkably integrated visual language**. This art of pure ornament revolves around ... central themes;

crystalline geometric patterns, the harmonic and symmetrical subdivision of the plane giving rise to intricately interwoven designs that speak of infinity and the omnipresent center ...”

Topics-wise this course tries to capture the essence of this quote by examining Islamic designs from a perspective of their cultural, regional, and religious relevance and in particular, their geometrical and constructive properties looking in particular in the dominant tiles as well as the symmetries that define these patterns.

COURSE RESOURCE

The course material will be on Canvas. Any subsequent reference to ‘Canvas’ refers to the course Canvas website.

The class will be **conducted entirely remotely** through Zoom. The meeting link will be announced in Canvas. Links for each class in this course are provided in the Syllabus section on Canvas.

‘Jump to Today’ tab in the section will help find the class link.

Please refer to the section below on Using Zoom.

COURSE REQUIREMENTS

There is no course requirement.

However, I use the software Geometer’s Sketchpad for ruler-compass constructions to illustrate some of the designs that we look at in the class.

For 64-bit Mac users, there is a freely available Beta test version from <http://gsptest.scratchconsortium.com/download.html>

Windows and 32-bit Mac installers can be downloaded from <https://sketchpad.keycurriculum.com> IT had installed the software on CMB 1032 in 2018. I will check to see if the software is still installed and whether you can access it via Virtual Andrew.

Another useful software is [taprats](https://sourceforge.net/projects/taprats/) (<https://sourceforge.net/projects/taprats/>) for creating Islamic tilings based on the Hankin method. I will do a brief demo in class.

GRADING

Grades are based on constructive **analysis** of three types of patterns and a **design** exercise with an accompanying **report**

- Designs will be produced on the last day of class with the help of Teresa MacGregor, Director of the Library, CMU-Q. You will be expected to submit photographs of your designs.

Students will receive feedback on their assignments.

- Grades are based on the following scheme:
A: 90% and over **B:** 80-89% **C:** 70-79% **D:** 60-69% **R:** < 60%
- Students are not graded on a curve.
- All assignments should be submitted on Canvas.

TEXTS AND READINGS

There is no textbook for this course, but my lectures will be based on material drawn from the following texts. The books are available from the library at CMU-Q either on the stacks or accessible online.

- Eric Broug. *Islamic Geometric Designs*. Thames & Hudson, 2013.
- Eric Broug. *Islamic Geometric Patterns*. Thames & Hudson, 2019.
- Jay Bonner. *Islamic Geometric Patterns*. Springer, 2017.
- Brian Wichmann and David Wade. *Islamic Design: A Mathematical Approach*. Birkhäuser, 2017.
- Daud Sutton, *Islamic Design: A Genius for Geometry* (Wooden Books), Bloomsbury, 2007
- Jules Burgoin *Arabic Geometrical Pattern & Design*, Dover Publications 1973 (based on *Éléments de l'art arabe: le trait des entrelacs* by J. Bourgoïn, 1879, Paris)

Other readings may be provided on Canvas.

POLICIES

All university academic and student policies as set out in <http://www.cmu.edu/graduate/policies/> and <https://www.cmu.edu/policies/student-and-student-life/index.html> apply to this course.

Specifically:

- You are expected to be on time at all lectures (remotely).
- Email should only be used for crucial queries and concerns. Please direct course-related questions to me.
- In necessary circumstances where you are unable to attend class, please make sure to inform me via email and I will address the situation accordingly.

REMOTE INSTRUCTION

This semester involves the regular use of technology during class. Research has shown that divided attention is detrimental to learning, so I encourage you to close any windows not directly related to what we are doing while you are in class. Please turn off your phone notifications and limit other likely sources of technology disruption, so you can fully engage with the material, each other, and me. This will create a better learning environment for everyone.

USE OF ZOOM IN THE CLASS (INCLUDING USE OF VIDEO)

In our class, we will be using Zoom for synchronous (same time) sessions. See the Zoom link on Canvas.

Please make sure that your Internet connection and equipment are set up to use Zoom and able to share audio and video during class meetings.

(See <https://www.cmu.edu/computing/start/students.html> for information on the technology you are likely to need.) Let IT at CMU-Q know, as early as possible, if there is an issue with your technology set-up to sort it out.

SHARING VIDEO: In this course, being able to see one another helps to facilitate a better learning environment and promote more engaging discussions. The default is to expect students to have their cameras on during lectures and discussions. However, I also completely understand that there may be reasons students would not want to have their cameras on.

Note: You may use a background image (preferably static image) in your video if you wish; just check in advance that this works with your device(s) and internet bandwidth.

- During our class meetings, please keep your mic muted unless you are sharing with the class or your breakout group.
- If you have a question or want to answer a question, please use the chat or the “raise hand” feature (available when the participant list is pulled up). I will monitor these channels to call on students to contribute.
- Our synchronous meetings may involve breakout room discussions, and those will work better if everyone in your small group has their camera turned on. During large group debriefs, you may keep your video off.

RECORDING OF CLASS SESSIONS

All synchronous classes will be recorded via Zoom so that students in this course (and only students in this course) can watch or re-watch past class sessions. Please note that breakout rooms will not be recorded. However, chats are recorded. We do not encourage private chats during recorded Zoom sessions, instead, we recommend that you send us emails. We will make the recordings available on Canvas as soon as reasonably possible after each class session. Recordings will live on Canvas. Please note that you are not allowed to share these recordings. **This is to protect your FERPA rights and those of your fellow students.**

RESPECT FOR DIVERSITY

It is my intention that all students irrespective of background or perspective continue to be well served by this course, that students’ learning needs are addressed both in and out of class, and that the diversity that you bring to this class be viewed as a resource, strength, and benefit. I intend to present materials and activities that are respectful of diversity in all its forms. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. Moreover, should any of our class meetings conflict with religious events, please let me know so that we can make suitable alternate arrangements for you.

ACCOMMODATION FOR STUDENTS WITH DISABILITY

If you have a disability and are registered with the Office of Disability Resources, I encourage you to use their online system to notify me of your accommodations and discuss your needs with me as early in the semester as possible. I will work with you to ensure that accommodations are provided as appropriate. If you suspect that you may have a disability and would benefit from accommodations but are not yet registered with the Office of Disability Resources, I encourage you to contact them at access@andrew.cmu.edu.

In this specific edition of the course, I have students who require the assistance of a notetaker. **The Office of Disability Resources will be looking for a volunteer peer notetaker.** If you are interested

in volunteering, please let me know after the first class, and then please contact Catherine Getchell at getchell@cmu.edu to receive further instructions regarding how to sign up as a notetaker.

STUDENT WELL-BEING AND SUPPORT

Carnegie Mellon University is deeply committed to creating a healthy and safe campus community including one that is free from all forms of sexual and relationship violence. To that end, University Health Services, the Office of Community Standards & Integrity, and the Office of Title IX Initiatives have partnered to expand their educational efforts for graduate students in this domain. There is an educational opportunity for all graduate students at Carnegie Mellon that reflects its commitment to sexual assault and relationship violence prevention as well as to your overall safety:

It is important to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs, getting enough sleep, and taking some time to relax. This will help you achieve your goals and cope with stress.

All of us benefit from support during times of struggle. There are many helpful resources available to all students on campus. Asking for support sooner rather than later is more often helpful. If you or anyone you know is experiencing academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support. Seek Counseling Services on campus here to help. Consider reaching out to a friend, faculty, or family member you trust for help getting connected to the support that can help.

COURSE SCHEDULE*

* Schedule subject to change

WITH REVISED CHANGES

Lecture	Date and Time	Topic
1	Wednesday September 30, 2020 6.00-7.30 pm Doha (11.00am – 12.30pm EST)	Introduction to the course Historical development of Islamic Designs
2-4	Saturday October 03, 2020 3.30-5.00 pm Doha (08.30am – 10.00am EST) 5.30-7.00 pm Doha (10.30am – 12.00pm EST) 7.30-9.00 pm Doha (12.30pm – 2.00pm EST)	CLASS CANCELLED (DUE to personal EMERGENCY) Grids and Islamic designs Constructing Islamic Designs
5 2	Monday October 05, 2020 6.00-8.00 pm Doha (11.00 am – 1.00 pm EST)	Symmetry in Islamic Designs Grids and Islamic designs
6 3	Wednesday (extended session) October 07, 2020 6.00-9.00 pm Doha (11.00 am – 2.00 pm EST)	Discussion of analysis assignment and example analyses Islamic Designs Constructing Islamic Designs

Lecture	Date and Time	Topic
4	Thursday (extended session) October 08, 2020 6.00-9.00 pm Doha (11.00 am – 2.00 pm EST)	Symmetry in Islamic Designs Discussion of assignment and design
5	Tuesday October 20, 2020 6.00-8.00 pm Doha (11.00 am – 1.00 pm EST)	One-on-one session with students and CA Feedback and discussion of student assignment
6	Wednesday October 21, 2020 6.00-8.00 pm Doha (11.00 am – 1.00 pm EST)	One-on-one session with students and CA Feedback and discussion of student assignment
7	Monday 10/26 6.00-7.30 pm Doha (11.00 am – 12.30 pm EST)	Badge making with Teresa MacGregor