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Traditional Craft Heritage Training , Design & Marketing in Jordan and Syria  
(HANDS)

**Project Number: 610238-EPP-1-2019-1-JO-EPPKA2-CBHE-JP**

## Practical Training

Course Offered by: ZUJ, UJ, HU, JUST, MU, ABU, TU

## Module 4

### Responsible partner(s):

Training and Technical Group (TTG)

Scientific and Supervising Committee (SC)

vocational courses part at the training program

## PRACTICAL TRAINING

### REQUIRED

Each student will be required to proceed on 'Practical Training' for the fourth year. Training is provided in summer, for two weeks of practicing.

### OBJECTIVE

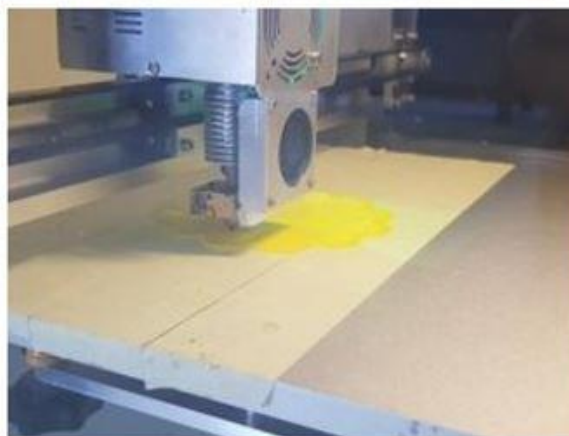
The aim of the 'Practical Training' is to enable the students to gain the kind and range of practical experience which will prepare them for their likely responsibilities, immediately after graduation.

Apply a variety of technologies and materials and studio-specific processes to the creation of studio work.

### OPPORTUNITY

Hands center provide a practical training for students in the faculty of architecture. The training provide the information needed for the software programs used in the design section, and the use of the new technology of CNC leaser, CNC router, 3D printer,

## PRACTICAL TRAINING



#### Training Rules: Practical Training:

- Each student will be required to proceed on 'Practical Training' for the fourth year. Training is provided in summer, for two weeks of practicing.
- Hands center provide a practical training for students in the faculty of architecture. The training provide the information needed for the software programs used in the design section, and the use of the new technology of CNC leaser, CNC router, 3D printer, ...

#### Aims of Practical Training:

- The aim of the 'Practical Training' is to enable the students to gain the kind and range of practical experience which will prepare them for their likely responsibilities, immediately after qualifying B.Arch. Course.
- The 'Practical Training' should be regarded as an important academic activity. Howsoever good the arrangement of training may be, the trainee student, still, has the responsibility to use his own initiative in making the best use of the opportunities which he/she gets during training period and prepare himself/herself for the profession.
- The student should try to seek a variety of experiences in his/her 'Training office' to acquaint himself/herself with various works, procedures etc. of building trade.

# SEQUENCE OF EXERCISES

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The work of our practical training is divided in three axes:

The first axis: the implementation of 3D models for two architectural sections of international buildings. using a laser cutting machine.

The building of the Musée d'Orsay in Paris and the Heydar Alief Center were selected.

The second axis: Implementation of a maquette for the general site of Sheikh Daher Square in the city of Lattakia, in which a laser cutting machine was used.

The third axis: Implementation of desks of wooden pallets after choosing the most appropriate design by the students.



# Architectural Patterns and Models

## Course Chapters

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RESPONSIBLE PARTNER(S): DR. SAWSAN MUALLA, MANARA  
UNIVERSITY , LATAKIA/SYRIA, JUNE /2022.

# Contents

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Course description

Chapter 1: Tools and materials used in model making

Chapter 2: Implementation of a simple building model

Chapter 3: Principles of model execution with modern technology

Chapter 4: Executing an architectural element model

Chapter 5: Executing a whole architecture project model



# Course description

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Course Code	Pre-Requisite	Academic level	Number of weeks	Number of teaching hours
AEFC303	AEFC302	3rd	13	52

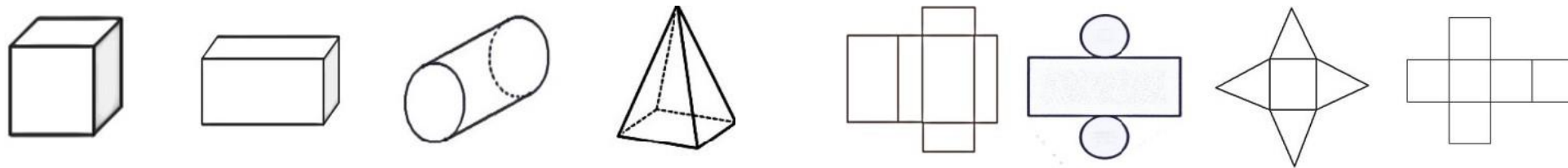
The course introduces the students to the process of model making as a means of expressing their architectural ideas. Different types of models are discussed, such as primary models which help the student develop his design idea, architectural models, and models of interior spaces. The course aims to develop student's manual ability to use different materials (paper, cork, plastic panels and other materials used in model manufacturing). Additionally, **it focuses on the importance of using modern technologies (such as 3D printers, laser machines and CNC) in creating models and the way to use them correctly to implement different configurations.**

# Chapter 1: Tools and materials used in model making

In this chapter students are:

- Introduced to the type of materials and tools necessary during the process of making a model .
- Taught the methods of cutting, grooving and bending various materials and how to merge them together in order to achieve the final architectural model.

These objectives are met through performing several exercises over two lectures (8 hours) in which students make simple geometric models such as cube, cylinder, cone, rectangular prism, pyramid. Students will learn how to draw each of these geometrics as 2D on different materials and how to cut or bend them according to the used material and finalize the model correctly.

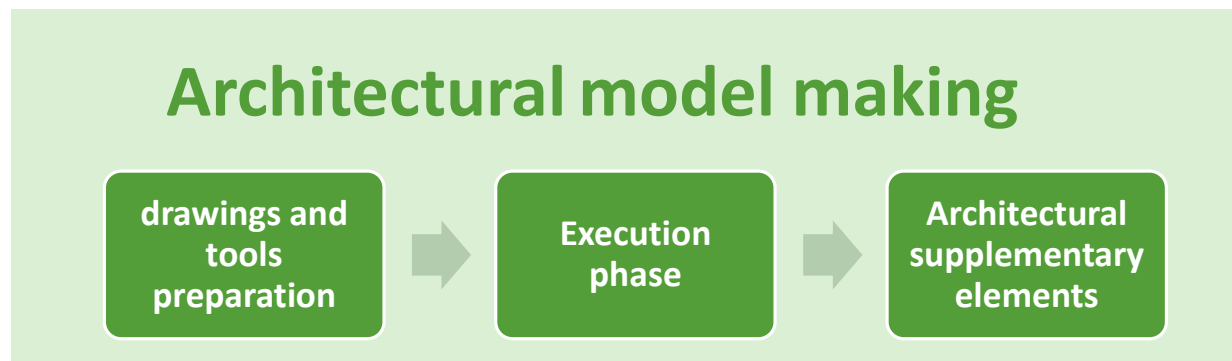


# Chapter 2: Implementation of a simple building model

In this chapter students :

- learn how to make a model on a scale, cut walls and ceilings , create interior elements such as chairs and tables, create exterior elements such as cars trees and green areas..
- are able to professionally execute building models and their architectural supplementary elements.

These objectives are met through making a small architectural model such as multi-purpose hall or a grocery store over 3 lectures (12hours)





# Chapter 2: Implementation of a simple building model

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The project is executed in the following steps:

1. **Preaper the needed drawings and tools:** selecting materials and tools and then drawing the building's plan and elevations on the selected material .
2. **Execution phase:** cutting the plan borders and elevations, then preparing the ceiling and walls. Then, elevation are sticked together and the ceiling is installed above them.
3. **Architectural supplementary elements:** that are divided into:
  - a) Building add-ons elements: students learn how create windows, doors , furniture , tiling.
  - b) Landscape add-ons: students learn how create trees, people, cars, streets, heels or mountains.
  - c) Model's Base: students are introduced into types of bases that can be installed in their model.



# Chapter 3: Principles of model execution with modern technology

In this chapter students will learn:

- types of machines that can be used in manufacturing models and how to choose it properly according to the suggested model design and materials.
- how to prepare architecture plans that will be entered into the program of model making machine.

These objectives are met through two laboratory visits (8 hours)

**First visit** : Students will be introduced to the 3D printer and the laser machine in terms of how they are used, what are their operating programs, what types of materials can they process, etc. Afterwards students will experiment various material using these machines while making small objects.

**Second visit** : Students will be introduced to the CNC-machine and will learn how cad files should be drafted in order to be inserted into machine's program. A small model will be manufactured in front of the students, step by step, from the beginning till resulting the final model .

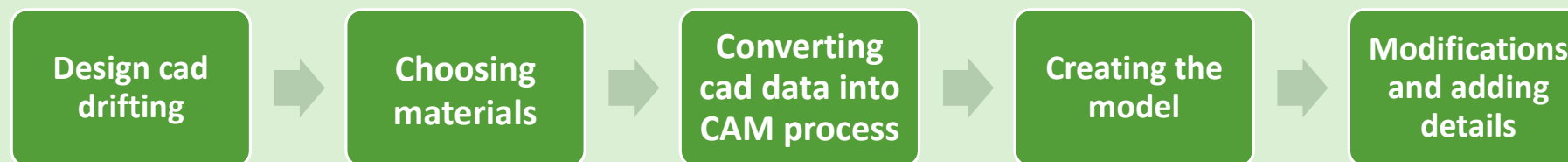
# Chapter 4: Executing an architectural element model

In this chapter students will :

- execute a small architectural element model using the available machines.

Each student will work on a model over 3 lectures (12 hours) under the supervision of engineers and lab workers. The chosen model will be a small architecture element such as window, door, table, chair, Islamic ornaments, etc.

## Model making with machines



# Chapter 4: Executing an architectural element model

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Steps of model making process:

1. Students will draft their designs with cad program.
2. They will choose type of materials with which the model will be created.
3. The cad data gets passed onto the Computer-Aided Manufacturing (CAM) process. The CAM package involves the conversion of data into coordinates for the understanding of the CNC machine.
4. CAM programs transform the architect's design into machine language and creates the model.
5. Students put all the pieces together and can add manually various details or decorations.





# Chapter 5: Executing a whole architecture project model

In this chapter students will :

- Make a model that represents an entire architecture project

Students will be divided into groups. Each group will be composed of 2 or 3 students and will execute a model. The chosen architectural project can be either villa, café, clinic or a small shopping compound. The process of model making will take 3 lectures (12 hours) and will be manufactured using the available machines. The process of the model making is similar to the previous chapter but is more components.

The architecture project model will contain :

- The building along with its openings and various façade elements and decorations.
- The surrounding landscape including streets, pedestrian paths, green spaces, water ponds, trees, etc.
- Urban furniture such as benches, cars, traffic light, street lamps, trash bins, etc.

Each of these components will be executed separately and modified, colored if necessary and added to the final model.



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# Drawing, modeling, and models

Introducing the concept of heritage

Elements in the formation and volumes in the models

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RESPONSIBLE PARTNER(S): HOUIDA KHUZAM. FACULTY OF ARCHITECTURE ,  
HOMS /SYRIA, JULY /2022.



# Plan of course

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- Introduction
- The formation and its types
- The concept of composition and its types
- Introducing the concept of heritage elements in  
the formation and volumes in the models
- Some exercises
- References



# Introduction

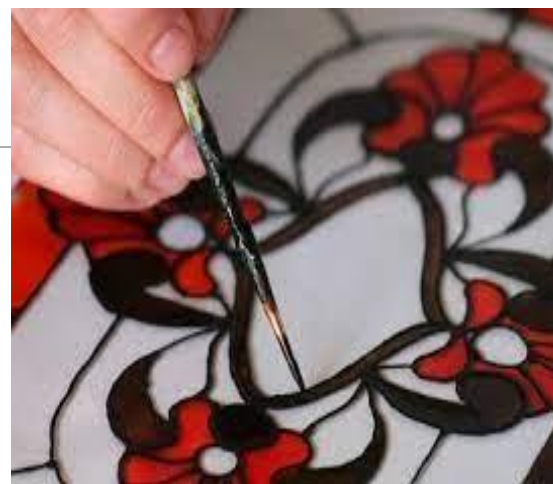
## Formation and composition in traditional architecture

The relationship between the plastic arts and architecture is a reciprocal one as it appears in the artistic and engineering plastic paintings and the study of surfaces ,as well as in the formations of volumes in an artistic and geometrical abstract manner , as well as this appeared historically in traditional architecture and heritage craft arts ,through the geometric and plant decorations and the use of Arabic calligraphy and its types that are full of facades, heritage buildings , floors , doors and windows highly crafted , as was evident in the prominent volumes with ornate surfaces (such as mashrabiya ,fences,...) in historical buildings and designs , traditional crafts had a prominent role in forming these formations in a beautiful artistic way through the use of decorations and carving them on wood ,stone or metal and the colored drawings on stained glass ,which formed the most beautiful

Paintings , and the art of making pottery and formations with clay has an important role that appear in the mud houses ,their domes and walls.

Therefore ,it is worth taking advantage of these traditional arts and crafts in the formulation of decorative formations on surfaces and volumes in an artistic and

engineering way and include them in the core of architectural education ●



## How to draw and make models:

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In order to learn the art of drawing and formation in the level and space you should have knowledge of the methods of formation and artistic and architectural formation and its types , also it's necessary to enrich the student's imagination and strengthen his free hand in quick drawing sketches





## The formation and its types:

### Formation elements:

Shapes are one of the design elements.

The artwork consists of elements

and critics differed in determining them ,even if they agreed on their existence.

They are :**1.Shape, 2.Line, 3.Space,4.Light 5.Shadows**

# Formation parameters:

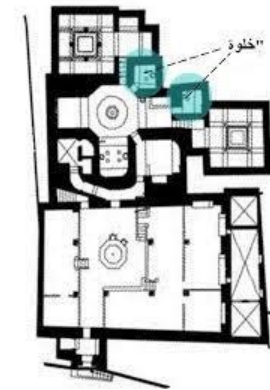
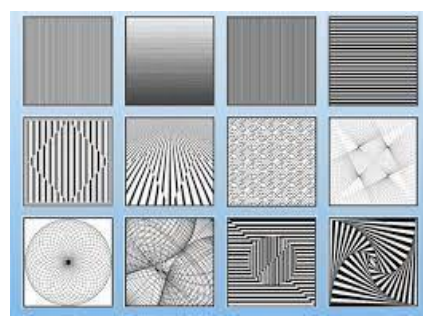
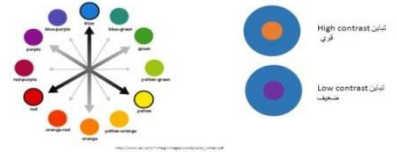
## 1. Contrast

### 1. contrast types:

-Color contrast, contrast in size, contrast in lines direction, contrast in area,

Contrast التباين

• Color — complimentary colors on the color wheel, i.e. red vs. green, blue vs. orange, yellow vs. violet



contrast in shape.  
contrast in texture



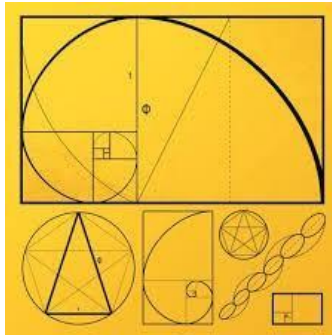
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# Formation parameters:

## 2.Compatibility



## 3.Ratio



## 4.Shape







## Formation basics:

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In addition to their function in the plastic construction ,the plastic elements or vocabulary play an aesthetic role ,which is related to placing these elements on the surface of the design and their interrelationship with the neighboring elements that achieve various artistic values

**1.The rhythm:-** through( repetition , gradation , diversity ,continuity)



# Formation basics:

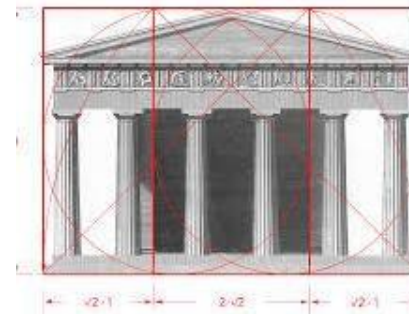
## 2. Balance



## 3. Unity in design and composition



## 4. Proportionality





## The concept of composition and its types:

In Art and design there is the method of arranging and coordinating the elements and parts of the construction so that it gives a consistent image

The composition includes a sense of three-dimensional mass or volume .It can be distinguished through the visual components of shape, size, color, and texture

## Types of compositions:

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### 1. Simple compositions

Simple composition's types:

- Imperfect composition:

By decreasing part of its main volume

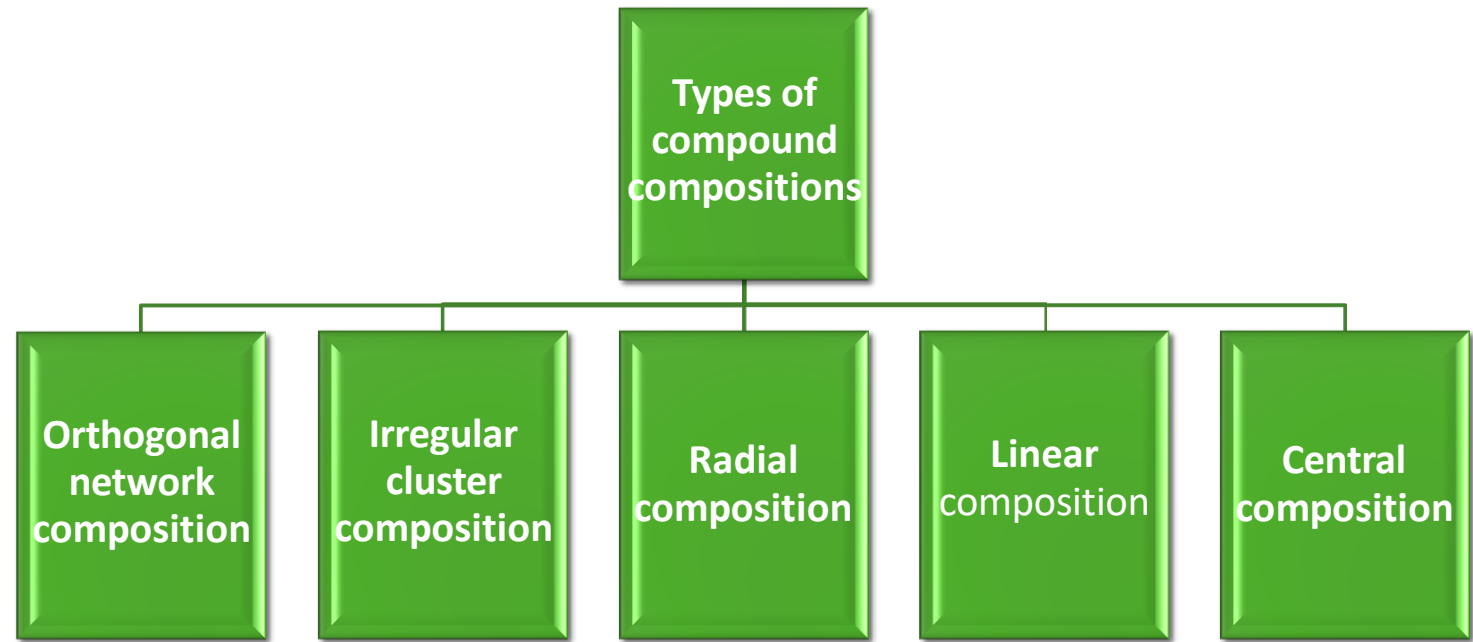
- Additional composition:

By adding a secondary volume to the original volume



Types of compositions:

2.Compound compositions :consisting of more than one component





## □ Introducing the concept of heritage elements in the formation and volumes in the models: Types of Islamic decorations

There are many types of Islamic motifs, which consist of decorative units borrowed from nature with or simplification and some additions or modifications

The decorative unit is the basis that is repeated to form the complete decoration, and the shape unit is determined by the type of decoration that will be drawn

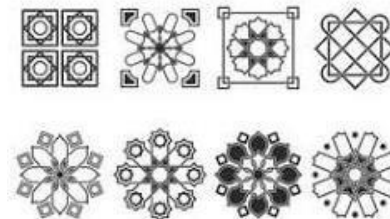


## Types of Islamic decorations

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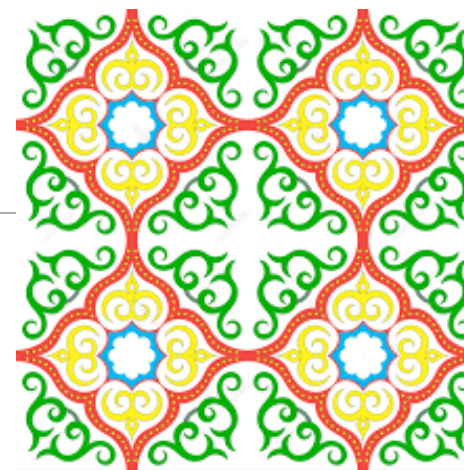
There are many classifications and types of decorations which is divided into :

**Geometric decorations** :They depend mainly on the geometric drawings according to mathematical and geometric rules ,they are formed from drawings and geometric shapes



## Plant decorations: (floral motifs)

The botanical decoration depends on quoting their form from plants and their components of leaves ,stems ,and their inter weaving and branching



HEGAPML

Download from <https://www.erasmus.eu/>



## Animal decorations:

They were not used much in Islamic civilization, they rely on the form of animals and birds to express situations



## Written decorations:

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They are the decorations resulting from the overlapping of Arabic letters according to the rules that govern the type of calligraphy, and Muslims have been very creative in this color of written decoration which was associated with the Kufic calligraphy in particular, because it depends on its writing on straight lines and circles with some modification, it's easy to combine the Kufic calligraphy with drawing decorations



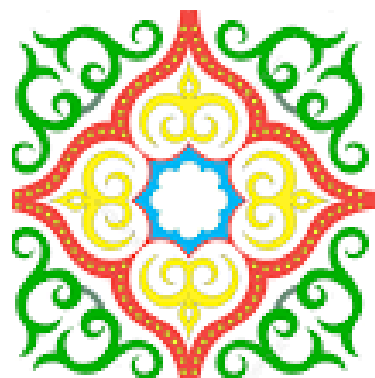


## Some exercises

- All exercises are combined with lectures about the ways of execute them

### Exercise 1:

The student is asked to draw a formation on an A4 plate from one of the geometric , plant ,animal or Arabic calligraphy motifs , with colors or black and white ink. Using the patterns attached below as examples



## Stained glass

is a colored glass as a material or works created from it. Throughout its thousand-year history, the term has been applied almost exclusively to the windows of churches and other significant religious buildings



## Some exercises

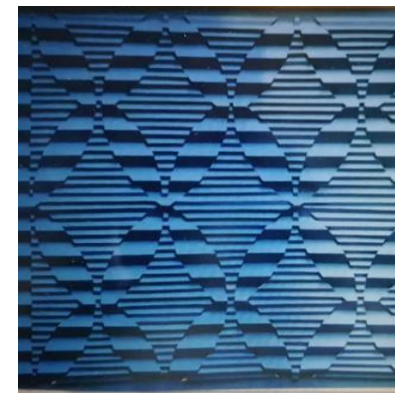
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### **Exercise 2:**

The student is asked to draw on an A4 glass plate ,a decoration in the type of stained glass in the appropriate colors in the traditional crafts laboratory under the supervision of one of the craftsmen using the patterns attached above

## Gummy and embossed plates using cardboard

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### **Exercise 3:**

The student is asked to form a plate of A4 size cardboard to form surfaces gummy and embossed decorations similar to the formations shown above.



## Some exercises:

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### **Exercise 4:**

The student is asked to draw one of the decorative formations on a wooden board in A4 scale and cut and carve it on a CNC machine in the handicraft laboratory as in the adjacent figure.

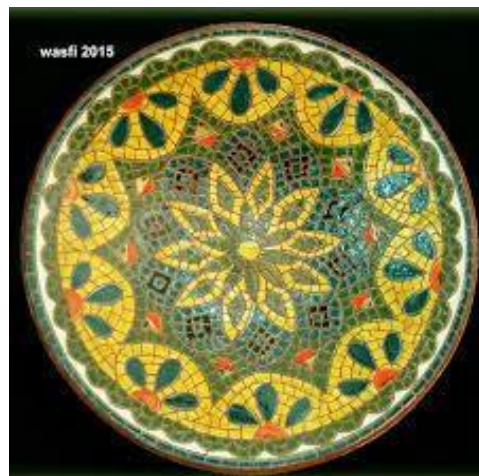


## Some exercises:

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### Exercise 5:

The student is asked to draw on one of the clay dishes that were formed in the traditional crafts laboratory on the clay-making machine using the following models under the supervision of one of the specialized craftsmen







## Some exercises:

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### Exercise 6:

The student is asked to make a three-dimensional model of wood or cardboard by combining decorative surfaces as shown in the attached volumes

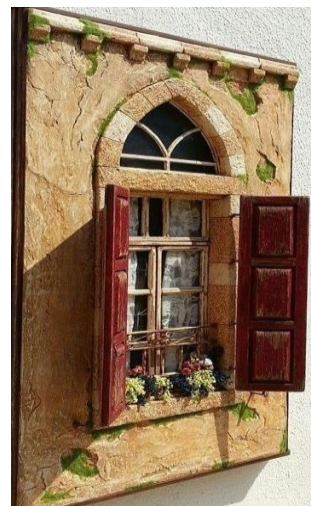
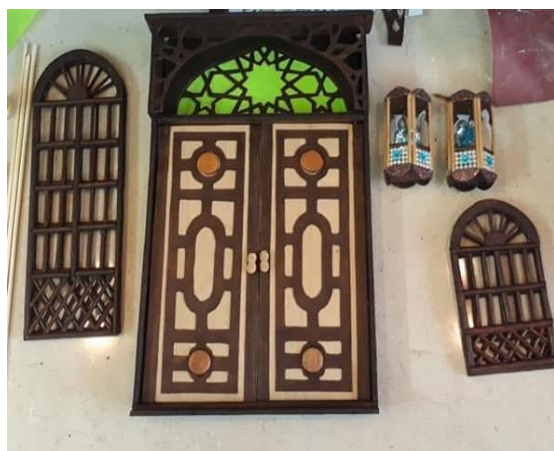


## Some exercises:

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### Exercise 7:

The student is asked to form a traditional facade or (mashrabiya) from the heritage elements as in the attached examples using wood or cardboard using a wood-cutting machine in a traditional crafts laboratory





## Some exercises:

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### **Exercise 8:**

The student is asked to design and make a model of a traditional wooden chair or table at a scale of 1/10 using a wood-cutting machine and CNC machine in a traditional crafts laboratory as in the examples below





# References or Suggested Further Reading

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- The foundations of Architectural Design and Formation –Damascus University –Faculty of Architecture -2006-
- Compositions in Architecture Book (Don Hanlon )2009
- Stained glass (wikipedia)
- Principle of technical composition [www.mowdoo3.com](http://www.mowdoo3.com) 2021
- Traditional Hand Craft book
- [www.noor-book.com](http://www.noor-book.com)



# Design and Implementation of Traditional Architecture Elements

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RESPONSIBLE PARTNER(S): DR. SAMAHER WANNOUS, RANA BADER .

## Design and Implementation of Traditional Architecture Elements

Incorporate knowledge of contemporary and historical art and design theories, principles and historical practices in the conceptualization and development of studio work.

Training students to research the architectural elements that characterize local architecture and fit the social environment.

Redesign and implement these heritage architectural elements and use them in accordance with the requirements of modern architecture.

### Traditional motifs

This topic is meant to identify the traditional decorative units found in local architecture and reuses them within contemporary designs.

### Elements of local traditional architecture

In this topic, the various local traditional elements in the Syrian architecture are identified and analyzed through a research note, selecting one of these elements, and re-studying it within a contemporary context.

### Stucco, gypsum, stucco decoration

Through this topic, the technique of working with stucco and its role in the traditional architectural formation is identified, and the modern techniques in this field are recognized and applied in practice through the use of modern technologies.

### Arabesque

This topic aim to identify the arabesque and its role in the elements of traditional architecture; In addition to the role of modern technologies in the fields of engraving, cutting, and integrating them in the design stage to reach contemporary designs that imitate traditions .

### Mushrabeyeh

The mashrabiya has an important role in architecture and local culture. It forms influential element in contemporary architecture as it is reflected in the design of the facades in multiple forms by using the latest technologies. Through this exercise, students learn about the patterns of the mashrabiya, and conduct studies pertaining to shadow and light through the contemporary mashrabiya.

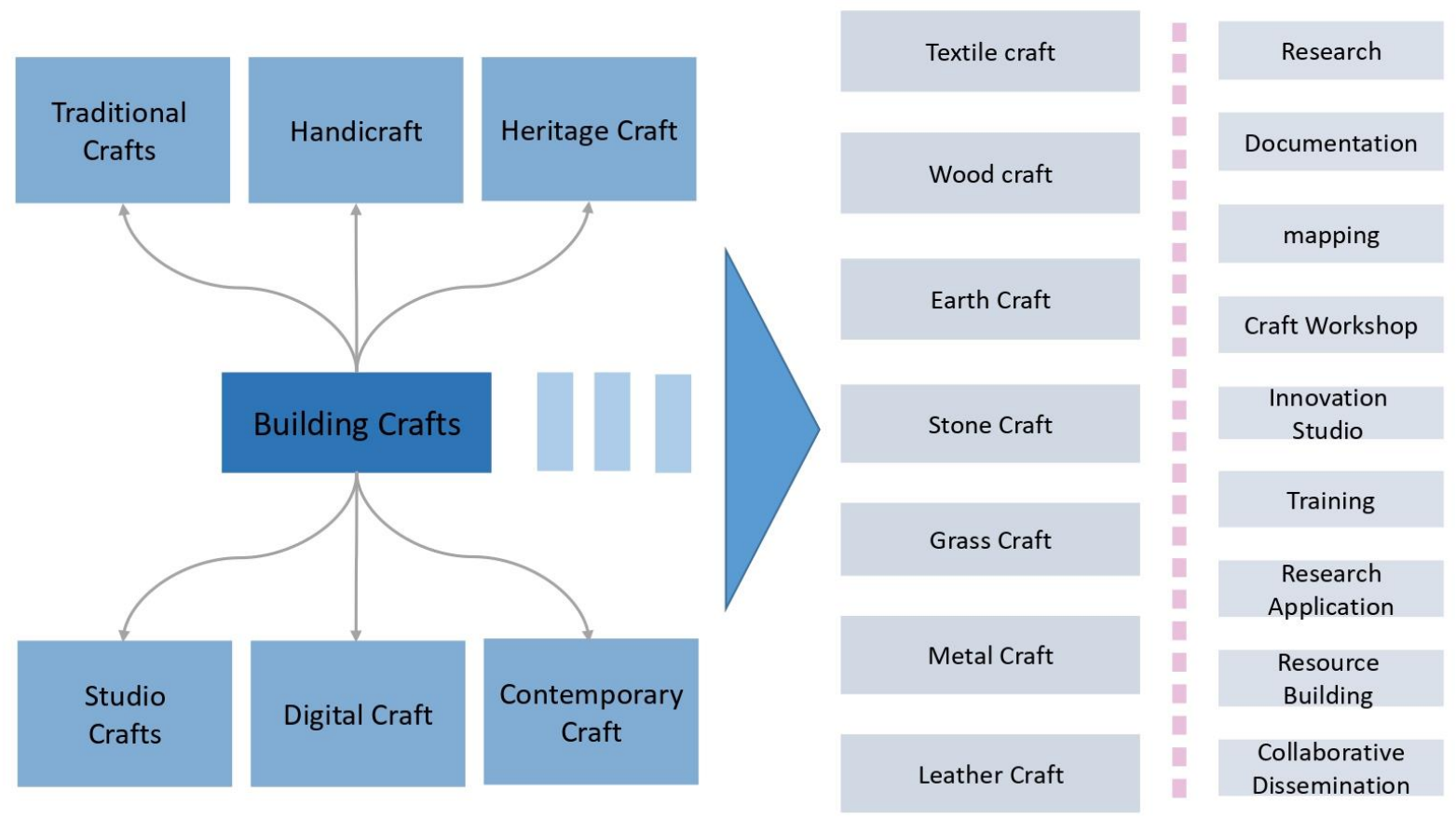
### E-marketing strategies and tools

Enabling the student with the principles of e-marketing



- 
- Traditional motifs..... ( 20 %)
  - Elements of local traditional architecture.....( 30 %)
  - Stucco, gypsum, stucco decoration ..... (15 %)
  - Arabesque..... ( 15 %)
  - Mushrabeyeh..... (20 %)

# Architecture and craft







# Traditional motifs

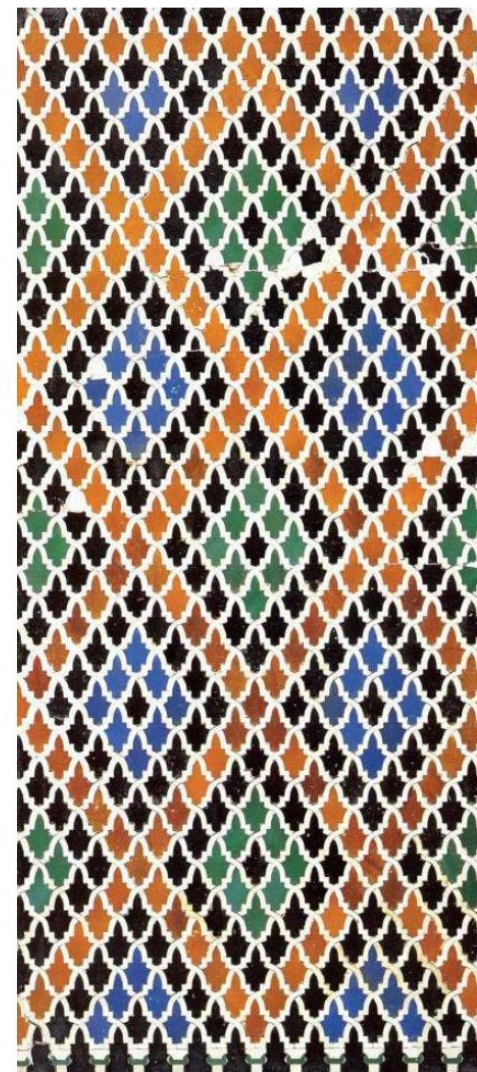
- DECORATIVE DEFINITIONS:
- PIERCING :hollowing out the wood to form signboards, landscapes, birds, animals, etc.. If it is ornamental plant motifs, on wood or stone, it is called CROCKET, and if it is linear or engraving, it is LACE.
- GILDING: adding gold to another material.
- FLOWERING: Decoration with floral patterns.
- INTERLACING:( ENLANCEMENT, NETTING )Overlapping geometric or zigzag lines so it will become difficult to distinguish between the beginning of the line and its end.





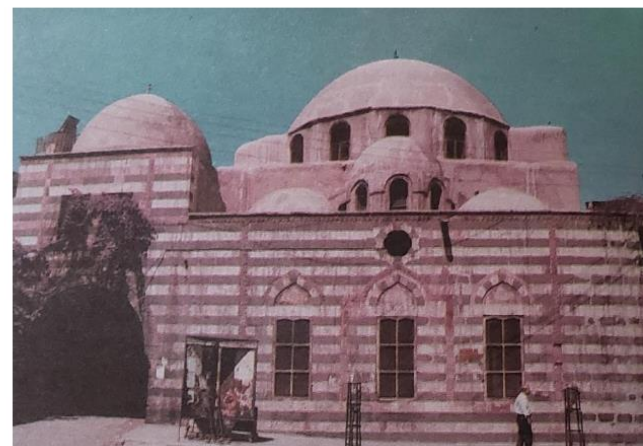
## Traditional motifs

- DECORATIVE DEFINITIONS:
- ARBORIZATION: Decorating with the shapes of trees and their branches.
- INLAYING: Carve shapes or drawings into wood of furniture or furnishings, such as doors, cabinets, boxes, then cut the same shapes from, seashells, bone, silver, tin, or copper and fix them in their carved positions.
- DAMASCENING or CLOTHING: Covering a metal with another metal that is more valuable than it, such as coating silver with gold, or copper with silver.
- FOLIATE: motifs derived from the shapes of leaves and plants.



## Elements of local traditional architecture

- ABLAQ: (ALTERNATING COLORED COURSES) are the horizontal stone rows in which the colors alternate, such as black and white, red and white, black and yellow, red and earthy, or brown and earthy , etc.
- The use of ABLAQ in buildings spread in Syria and Egypt, especially in Cairo, which was the first capital of the Mamluk state which was known for its striped dressed stone masonry



مجموعة درويش باشا العمرانية في العهد العثماني  
في شارع الدرويشية في دمشق

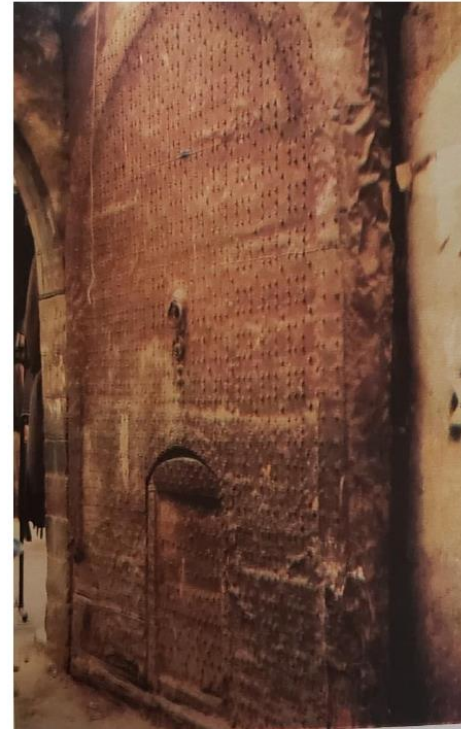
# Elements of local traditional architecture

- DOOR : the entrance of the building, or the city.
- KHAOKHA DOOR ( GAP IN A DOOR):

It is a form of door that was widespread in a number of Damascus constructions and was known as "Bab Khaokha", and it is a small, low door within the main large door, not accommodating the passage of more than one person at a time, and this may be forced to bend due to its low.

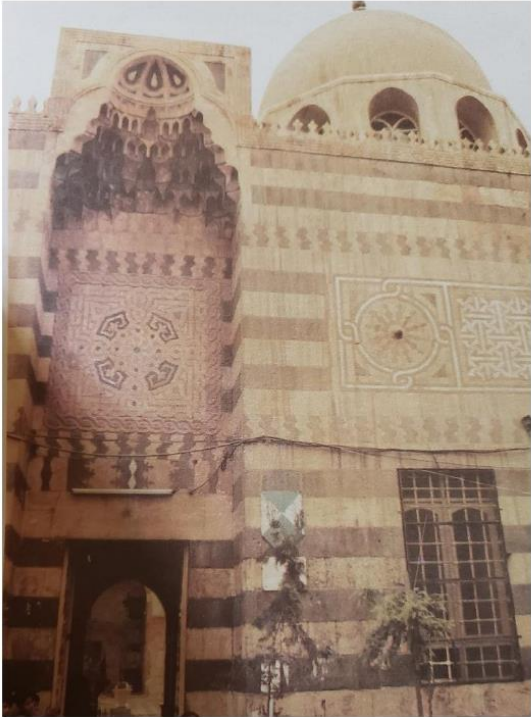
- GATE ( RORTAL):

The gate is a name usually given to the gates of important structures that are distinguished by the magnitude of their construction, the magnificence of their decorations and the breadth of their area, such as mosques, hospices, corners, schools, pimistans, palaces, castles, walls, cities, etc ..

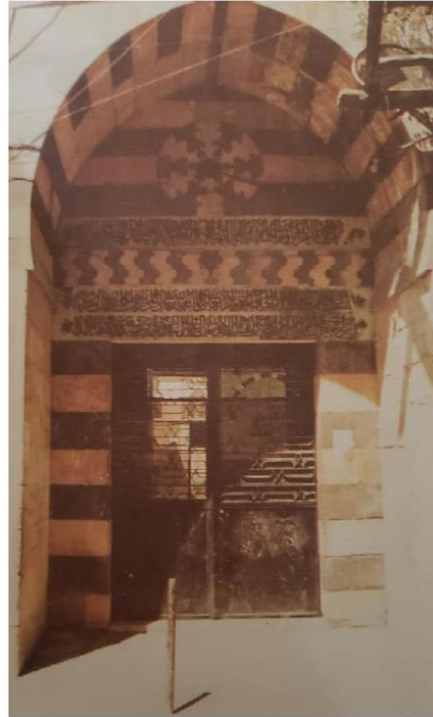


باب خوخة في بوابة زقاق البرغل  
داخل باب الجابية

# Elements of local traditional architecture



بوابة دار القرآن الصابونية من العهد المملوكي المتترف  
بالزخارف



بوابة الجامع الجديد من العهد المملوكي تزخرفها  
أشرطة كتابية ومزورات, وفي أعلاها عقد حدودي  
مدبب



بوابة المدرسة العادلية الكبرى من العهد الأيوبي,  
معقودة بقوسين ثلاثي الفصوص و بينهما دلالية

## Elements of local traditional architecture

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### COLUMN CROWN (CAPITAL): •

The head of the column or the part that crowns the top, which is either simple or decorated, and its decoration varies according to the urban character of each people.



## Elements of local traditional architecture

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### PANAL: •

A framed ornamental space, or a hollow decorative structure, or a panel framed of stone, stucco, wood, metal, etc. engraved with vegetal, geometric, or written motifs or, in rare cases, animal, and these carvings are usually either embossed, sunken, or buttoned. It takes the shape of a square, rectangle, round or half-round, and it may be in the form of a rhombus, triangle, star, ellipse, or crescent.



## Elements of local traditional architecture

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### TURNEY : •

It relies on adapting the wood piece to a sharp metal head while it is rotating manually or automatically. This craft provides staircase railings, minaret balconies, window grilles and columns integrated into the doors, as well as some furniture items such as chairs, tables.





# Elements of local traditional architecture

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## Arabic CALLIGRAPHY: •

Arabic calligraphy is one of the main elements of Arab decoration, and the inscription of Arabic calligraphy in Islamic architecture had two goals:

1) Quranic writings, "Hadiths", poetry, anecdotes, the date of the building, and the name of the ruler, the supervisor, or the Person who spend on the construction.

2) Decoration of gates, façades, walls, windows, and doors to break the monotony of other repetitive decorations, both leafy and geometric.



## Elements of local traditional architecture

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ANTRE ,PILE , SUPPORT: •

A single column or piece of wood, stone, or iron supports a bunchy wall, ceiling, or room and prevents it from falling



## Elements of local traditional architecture

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### MARBLE: •

Polychrome limestone, including white, colored, truncated and brittle, was used in the Byzantine era and was known by early Islamic architecture in its first buildings when Ibn al-Zubayr used it in the Kaaba and the pavements around, and the pillars of the Umayyad Mosque were built from it.



## Elements of local traditional architecture

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### DRUM: •

It is the section on which the dome rests, or it is the part that connects it to the roof of the building.

Contrary to its architectural function, the drum plays an important role in the decorative appearance, as it provides its sides with arched windows, both solid and open, and with single or twin windows within an arch, and in some cases with curves, or the drum may be smooth devoid of decorative or ornamental elements. It appeared in Syria in the Ayyubid era. The number of sides in each layer ranges between eight, twelve, sixteen, or twenty-four.



# Elements of local traditional architecture

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ZINC: ( HERALDRY, BLAZON) •

The chandeliers in the historic constructions of Damascus are round pieces of stone and engraved with a badge, a symbol or writings, which are slogans that the Sultan, the Sultan's deputy, the Emir or the influential person takes to indicate his official position, family rank, or work.



## Elements of local traditional architecture

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### AJAMI ( PERSAIN): •

A type of prominent decoration on wood coated with a repellent paste colored in different colors, decorating the walls of the halls and their fillings, rooms and ceilings ,with its beautiful patterns and colors, so it becomes like a piece of carpets; As well as decorating bridges, doors, columns, ornaments, wall cupboards doors and other wooden furnishings. We see it mostly in Damascus in the large and heritage houses

# Elements of local traditional architecture

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## .FAIENCE •

A decorative element of colored glass-coated ceramics, or of brick which is grided slabs coated with a thin layer of colored Chinese clay, until the clay layer hardens and becomes smooth and shiny.



## Elements of local traditional architecture

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### WINDOW: •

The window in the constructions of Damascus has three basic shapes. It is either a functional window, which is the regular rectangular window, or a functional decorative window, which is the curved ornamental window, or a solid window used for decoration only.





## Stucco, gypsum, stucco decoration

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A style of decoration based on engraving the mass of stucco in •  
vegetal, geometric or writing shapes, and using it as a decorative  
element on the walls of the structures, or piercing it for use in  
.windows and lunates, or in joggled glass



# ARABESQUE

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## ARABESQUE: •

A name given by the West to the Arab ornament in all its types, and in fact this designation is more comprehensive than it is intended, as it includes all Islamic motifs in architecture and art, such as the Arabic veil, botanical without specifying a specific form of it. and Arabic calligraphy paperwork,

- A number of researchers divided Arabesque into two parts:

1) Underlining: the geometric shape of Islamic decoration, such as straight lines, angles, polygons, stars, and Kufi font.

2) Securitization, afforestation, or flowering: the botanical form such as curved, twisted, or circular lines, as well as the shapes of animals and birds, and the soft, pliant Naskhi font.

# Mushrabeyeh

An embossed window of wood, executed by intersected or crossed capillaries. It is build in the old buildings of Damascus with square, triangular or specific geometric formations, and it is employed for two things:

1)The mashrabiya diffuses the rays of the sun entering the room in the summer, which reduces the temperature inside the room, and allows those inside to see the outside without being saw.

2)Mashrabiya are used to cool the (water jar) in the summer by placing them in a circular hole at the bottom of it, so the current air down cool it

.the mashrabiya in Damascus are called: “Khas”

# Thank You for your attention!

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