

ERNATIONAL U.

Portfolio Preparation & Graduation Thesis Study INDS 418

Fall Semester

Week number Six

07/11/2023



# 1. Outline

## 1. Project Components 2.Space Planning Of The Project

3. Standards-space Requirement



Objective:

To achieve each project's space program and its standards.

### Chapter 5 contents

This chapter is the design approach of the project, it delivers details of the interior space including the matrix, project components, relationship diagram, Space requirement of each part, and calculations of the space program areas.

	1. Inti	roduction							
4	2. The components of the project								
Part	1. Main Components								
	2.	Secondary Components	<b>L</b>						
	3. Spa	ice planning of the project							
2	1.	Design the space program of the project							
	2.	Criteria Matrix of each parts of the project							
art	3.	Relationship Diagram (bubble Diagramme)	ur ;						
<u>C</u>	4.	Spaces Arrangement (Spatial & Organization)	Å						
	5.	Zoning (Horizontal & Vertical)							
	6.	Circulation							
က	4. Sta	ndards-space Requirement Of Each Part (Dimensions,	m						
art	Furniture, & Measurements)								
à			Å						



### **1. Project components**

- **1.** The components of the project
  - Main Components 1.
  - 2. **Secondary Components**





### **1. Project components**

**1.** The components of the project



2.

Villa Secondary Components **Interior Function Exterior Function Dining Room** Entrance Reception Living Room Bathroom Bedroom Kitchen Garden Garage Storage Hot Kitchen Pool Cold Kitchen Playground Closet

Bathroom

Storage

## **1. Project components**

- **1.** The components of the project
  - 1. Main Components
  - 2. Secondary Components









### 2. Space Planning Of The Project



- **1.** Design the space program of the project
- 2. Matrix of each parts of the project
- 3. Relationship Diagram (bubble Diagramme)
- 4. Spaces Arrangement (spatial & Organization)
- 5. Zoning (Horizontal & Vertical)
- 6. Circulation

- 2. Space planning of the project
- **Space planning** is a fundamental element of the interior design process.
- It starts with an in-depth analysis of how the space is to be used.
- The designer then draws up a plan that defines the zones of the space and the activities that will take place in those zones.
- The space plan will also define the circulation patterns that show how people will move through the space.
- The plan is finished by adding details of all the furniture, equipment and hardware placement.



### space planning considerations

- The goal of space planning is to create efficiency.
- Space planning includes blocking out interior spatial areas, defining circulation patterns, and developing plans for furniture layout and equipment placement.
- How people actually, through observation of their physical behaviors, use their spaces.











The design of a building or space will have numerous requirements from the client or end user.

It is important in the very early stages of design to carry out in depth research and consider as many aspects of the use of the spaces as possible.

Some considerations can include:

- Do the spaces have specific functions or need to be particular shapes or forms?
- Do the spaces need to be flexible?



- Is it possible to create a logical and specific sequence of spaces?
- Do the spaces have different requirements in terms of light, ventilation, view, accessibility, acoustics, security?
- Do the spaces need to have access to outside spaces?
- What relationships must each space have with one another, and the external environment?
- How should the spaces be connected? Open plan, corridors?
- Which rooms need to be adjacent to one another and which rooms need to be apart?



### **1. Design the space program of the project**

After Specifying the main function of your project

It is a structured process that outlines the parameters of generally accepted sequences of tasks that occur from the point at which a designer or space planner begins to work on a project to the point at which the project is complete and occupied.

# SULIMATIONAL CAR

### **The Design Program (CREATING THE BRIEF /OR/ PROGRAM)**

- In space planning terms, <u>design programs</u> are written documents that qualify and quantify the clients' or the users' needs for a given project.
- **BRIEF** : according to the AIA/ASID Standard Form of Agreement for Interior Design Services does. Writing a brief or program, sometimes <u>referred to as a</u> <u>project analysis report, project manual, or</u> <u>developmental planning report, defines the</u> <u>direction and basis of the proposed project.</u>

Programming is a systematic approach to gathering information regarding goals, strategies, priorities, and existing problems within the organization, and then analyzing and interpreting this data to determine and define the client's goals, requirements, and objectives.

Preliminary goals, priorities, and strategies will often require revisions after the data is analyzed.

The final statement, which usually takes the form of a written document, creates the basis upon which the space planner can formulate a concept for the project, as well as a benchmark for both the decision making process and the evaluation of final solutions.



# How much is the average number of daily visitors?

The average numbers of daily visitors

The average numbers of the students

The average numbers of the users

➢ Governmental website/ Official website

Standards books

Case study



➢Governmental website/ Official website

# Calculating number of students at Fine Art college in 2021

- No. of students of Salaheddin university in 2011 is 10500 students according to central acceptance.
- •No. of students of Salaheddin university in 2021 is 20000 students according to central acceptance.
- •No of students of fine art college in **2011 is 345 students** for three existing departments (formation, theatre and music).



# Number of students of fine art college in 2021 is:

 $\equiv$ 

No. of students of fine art college in 2021

No. of students of Salaheddin uni. In 2021

X = 345

20000

X = 657students ~ 660 students

No. of students of fine art college in 2011

No. of students of Salaheddin uni. in 2011





# Building-standards-for-Iraqi-Private-schools

State	Standards
	The primary school building should contain (6) classrooms and the allocated area $(1,25)$ m <sup>2</sup> per student.
	The middle should contain (3) rows and (3) preparatory and (6) secondary.
	The area of the classrooms shall be $(1.5)$ per student and the height of the ceiling shall not exceed $(2.8)$ m <sup>2</sup> .
Iraq	Room with ventilation and non-overlapping outlets.
	The number of students does not exceed 30 students per class.
	The hall of the science lab is allocated $(35) \text{ m}^2$
	Specialty hall for laboratory (chemistry and biology)
	And a hall for laboratories (physics and computer) not less than (40) m 2.
	Library not less than (35) m 2.
	A room for the principal is not less than (16) m 2 and a room for teachers (20) m 2.
	Square paved (1) m 2 per student.
	Outdoor bathrooms with one rate per 30 students.
	Provides drinking water at the rate of 1 per 30 students with water coolers equipped with filters.
	The school building should be surrounded by an outer wall with two entrances devoid of coarse surfaces.
	The school must be far from industrial areas and factories.
	Providing a pharmacy + fire extinguishers.
	The building should not be occupied by shops or residences.

				1 cohort 4 classes 120 pupils	2 cohorts 8 classes 240 pupils		
	Places	m²/room	No.	m²	No.	m²	
General teaching rooms				326-490		592-748	
classrooms	24 – 32	5066	4	200–264	8	400–528	
group rooms	12–18	36-50			2	72–100	
multi-purpose rooms	32	72	1	90	1	72	
side rooms		18–36	1	18	1	24	
teaching equipment room		18–36	1	18	1	24	
Specialist classrooms						96	
work room	16	72			1	72	
side room		24			1	24	
music room	32	72					
School library/media centre				60		72	
Administration				36		102	
head teacher's room		12–18				60	
secretariat		1824		. 36			
teachers' room		24–50		12			
sick room		18			1	18	
parents' meeting room		12			1	1	
caretaker's room		12			1	12	
Communal areas				92		92	
kitchen servery		24	1	24	1	24	
dining/multi-purpose room			1	50	1	50	
side room		18–24	1	18	1	18	

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Utility areas caretaker's workshop room for cleaning materials storeroom		18 12	1	<b>24</b> 24	1 1 1	<b>66</b> 18 12 36
Caretaker's flat					1	80
Sports hall					1	600
Open-air sports facilities						
break areas with gymnastic and play equipment school garden playing field 100 m track long jump facility gymnastics lawn	4 tracks 3 tracks		1 pitch	600 150 400	1 pitch	1200 300 400
Subtotals general classrooms specialist classrooms school library/media centre administration utility areas				326–390 60 36 24		592–748 96 72 102 66
Total				446–510		928–1084
m²/pupil				4.0		4.2





	Formation Dep.				
No.	Spaces	m2/Person	Number	Area m2	Total area m2
1-	Lecture halls		2	48	96
	Drawing studio	3.5m2/p	2	126	252
	Changing		3	12	36
	Store		2	12	36
	supervisor		1	12	12
	Exhibition hall		1	50	50
2-	Ceramic				
	Ceramic workshop	3.5m2/p	2	126	252
	Clay store		1	115	115
	Kiln	9m2/p	1	175	175
	Glassed painting		1	60	60
	Lecture halls		2	48	96
	Changing		3	12	36



	Formation Dep.				
No.	Spaces	m2/p	Number	Area m2	Total area m2
1-	Lecture halls				
	Drawing studio	5.5m2/p	2	198	396
	Changing		1	12	12
	Store	4m2/p	2	144	288
	supervisor	6m2	2	216	432
	Exhibition hall	8m2	2	288	576
2-	Ceramic	5.5m2/p	2	198	396
	Ceramic workshop	m2/p	3	12	36
	Clay store		2	48	96
	Kiln	5.5m2/p	4-4(m-f)	3	24
	Glassed painting		1	18	18
	Lecture halls		1	12	12
	Changing		1	30	30
	Total area				





#### Programming Table

	Space	Adjacent space	Size	Zoning
	Entrance	2	$36 \ \mathrm{m}^2$	Public
	Lobby	1	80 m <sup>2</sup>	Public
-	Office	4	23 m <sup>2</sup>	Private
	Multipurpose space	2	209 m <sup>2</sup>	Public
	Kitchen	7	48 m <sup>2</sup>	Private
	Restaurant	6	297 m <sup>2</sup>	Public
	Storage	б	24 m²	Private
	Therapy room	11, 17	$22 \text{ m}^2$	Private
	Doctors' room	10	31 m <sup>2</sup>	Private
	Lounge area	14, 15	108 m <sup>2</sup>	Public
	Special care bedrooms	10, 12, 16, 17	22 m <sup>2</sup>	Private
	Relaxation area	14, 15	60 m <sup>2</sup>	Public
	Nursing post	10, 15	32 m <sup>2</sup>	Private





#### Programming Table



Figure 4.23 Ground floor. Floor plan. Retrieved from: Archdaily. Analyzed by: Author Rafeef AlQurashi, 2019



Figure 4.24 1st floor. Floor plan. Retrieved from: Archdaily. Analyzed by: Author Rafeef AlQurashi, 2019

	Space	Adjacent space	Size	Zoning
	Lobby	1,3	86.9m <sup>2</sup>	Public
	Lounge	2	217.5m <sup>2</sup>	Public
	Office	12,13	20m <sup>2</sup>	Private
	Restaurant	7	374.2m <sup>2</sup>	Public
ĩ	Kitchen	7,9,10	94.7m <sup>2</sup>	Private
	Consultancy room	12	18.8m <sup>2</sup>	Private
	Storage	8,9	21m <sup>2</sup>	Private
	Therapy rooms	20, E	Each room approx.: 20m <sup>2</sup>	Semi-private
	Yoga area	А	194m <sup>2</sup>	Public
	Massage rooms	22	Each room approx.: 47m <sup>2</sup>	Private
_			Total: 1094.1m <sup>2</sup>	

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## Calculating Total Net Area for each Department

Department Name											
No.	Spaces names	m2/Person	No. person/ capacity	No. Space	Area m2	Total area m2	Reference				
1-	Drawing studio	3.5m2/p	36	2	126	252	(Luis and Moncayo 1983)				
2-											
Total Are	Total Area (net space area)		4000 m2								



# Calculating Total Area

- Calculate the total area of all zones (**net Area**)
  - ➢ Example: 4000 M2
- >20% -25 % of the total area of zones= vertical and horizontal circulation & structure
  - ➤ Example: 4000 \* 0.2= 800
- >5% of the total area of zones= mechanical rooms and electrical rooms
  - Example: 4000 M2 \* 0.05= 200

#### >SO! TOTAL BUILT UP AREA = 4000 + 800 + 200 = 5000 m2

# **CRITERIA MATRIX**

- In this context, the word "criteria" refers to the program requirements,
- and the word **"matrix"** is best defined as a **"rectangular arrangement of elements into rows and columns."**
- The **criteria matrix** attempts to verbally and visually organize design program requirements in as concise a form as possible, achieving an overview of the problem in an at-a-glance format.
- The matrix format is a widely used technique for visually organizing information of a variety of factors; this format is sometimes referred to as a "chart" or "table."
- It is applicable to both small and large projects and is adaptable to either tight or open time frames or deadlines.



Departmental and interdepartmental communication: the primary focus is to establish spatial relationships or adjacency requirements between the various elements to determine placement in the space



In its most basic form, the matrix is a rectangular grid of notation spaces with names of rooms or spaces (or functions) listed in the column to the left and columns for verbal and/ or numerical indications of program requirements in the succeeding columns to the right.

notation columns for the most critical space
planning factors: (1) square meters
needs, (2) adjacency requirements, (3)
public access, (4) daylight and/or view,
(5) privacy needs, (6) plumbing access,
(7) special equipment, (8) sustainability
factors, and (9) special considerations.

CRITERIA MATE		, et	cites	ES			0	NT WS	ABLE
UNIVERSITY CAREER	2 5	40,40	PUBIC	DAVIL	Pen. CH	Pline	SPECIE	SPECIAL SPECIAL CONSIDE	SUSTAIN FACTORS
() RECEPTION									
2 INTERVIEW									
3 DIRECTOR									
(4) STAFF									
5 SEMINAR									
© RESTROOMS									
(7) WORK AREA									
(8) COFFEE									
@ GUEST SUITE									
10 MECHANICAL									

CRITERIA MATRIX									
UNIVERSITY CAREER									
() RECEPTION		00	н	Y	N	N	N	TRAFFIC HUB ADJ. TO ENTRY	LT. COLOR SURFACES REFLECT DAYLIGHT
2 INTERVIEW		0 €	М	)	L	N	N	FEELLIKE A TEAM OF 9	LT. COLOR SURFACES REFLECT DAYLIGHT
3 DIRECTOR		4	M	Y	н	N	И	HIGHEST IMAGE PRIVATE/REAR EXIT	
(4) STAFF		3	М	Y	М	N	N		
5 SEMINAR		0© 7	Н	1	н	N	Y	AV USE CLOSE TO ENTRY	DIMMABLE LED LTG.
© RESTROOMS		CENTRAL	м	N	н	Y	N		LOW FLOW PLUMB'G MOTION SENSORS
(7) WORK AREA		2 4 CENTRAL	L	N	М	Y	Y	ADD PLANTS TO CLEAN AIR	
(8) COFFEE		CENTRAL	Н	Y	N	Y	Y	CONVENIENT FOR EVERYONE	RECYCLINGBIN
@ GUEST SUITE		Remote	L	Y	Н	Y	N	RESIDENTIAL CHARACTER	ENERGY STAR REFRIGERATOR
10 MECHANICAL		REMOTE	N	Y	Y	Y	Y		SOUND ATTENUATION



LEGEND: H = HIGH M = MEDIUM L = LOW Y = YES N = NO/NONE I = IMPORTANT BUT NOT REQUIRED









COMPLETED CRITERIA MATRIX WITH ADDED ADJACENCY MATRIX DESIGN PROGRAM 2S

	CRITERIA MAT FOR: UNIVERSITY CAREER COUNSELING CENTER	RIX	<sup>40</sup> Ludoft	PUBLIC E	CALCESS ANDUC	PRIVACION DA LIENS	RUME	Special Special	ODECIAL CONSOCIAL CONSOCIAL	SUSTIMARE E	
		330	26	н	Y	N	N	N	TRAFFIC HUB ADJ. TO MAIN ENTRANCE	USE LIGHT COLORED SURFACES TO REFLECT DAYLIGHT	
*	(2) INTERVIEW ST. (9)	600	<u>1</u> 4	м	I.	L	N	N	FEEL LIKE A TEAM OF NINE	USE LIGHT COLORED SURFACES TO REFLECT DAYLIGHT	
	3 DIRECTOR	110	<u>(</u>	м	Y	н	N	N	HIGHEST IMAGE ACCESS TO REAR OR FOR PRIVATE EXIT		LEGEND: H = HIGH M = MEDIUM
	4 STAFF	160	3	м	Y	м	N	N			L = LOW Y = YES N = NO/NONE
	5 SEMINAR RM.	330	<u>1</u> 6 7	н	1	н	N	Y	A/V USE IMPORTANT CLOSE TO ENTRANCE	DIMMABLE LED LIGHTING	<ul> <li>I – IMPORTANT BUT NOT REQUIRED</li> <li>IMMEDIATELY ADJACENT</li> </ul>
	6 RESTROOM (2)	210	† CENTRAL ↓	м	N	н	Y	N		LOW FLOW FIXTURES MOTION SENSORS FOR LIGHTS	# - IMPORTANT ADJACENCY + - REASONABLY CONVENIENT
	(7) WORK AREA	120	2 4 CENTRAL	L	N	м	Y	Y		ADD PLANTS TO HELP CLEAN THE INDOOR AIR	REMOTE
		30	CENTRAL	н	Y	N	Y	Y	CONVENIENT FOR EVERYONE	ADD RECYCLING BIN	
		300	REMOTE	L	Y	н	Y	N	RESIDENTIAL CHARACTER	ENERGY STAR REFRIGERATOR	
$\overline{\langle}$		190	REMOTE	N	Y	Y	Y	Y		SOUND ATTENUATION	
	TOTAL NEEDED = 2 3250 S.F 815 S.F. = 34	370 S.F. 435 S.F.	TOT/ LESS	AL AVAIL S 25% FC	ABLE DR CIRCU	JLATION	= 3250 S = 815 S.	S.F. F.			·

Illus. 1–12 Criteria matrix with square feet and adjacency.

# **3 BUBBLE DIAGRAMS**

#### Relationship Diagrams

The relationship diagram is an excellent transition between the essentially verbal analysis of program development and the completely graphic techniques used in physically planning a space.

The relationship diagram is part of the pre-design process, because it represents a graphic abstraction or interpretation of the program information rather than a planning solution.

# SULAIMAN 2014

### How to start??

- With the criteria matrix just completed and the required rooms and spaces fresh in your mind, draw a circle for each required space so that its position on the paper represents a correct or appropriate relationship to the other spaces.
- Use connecting lines between the circles to indicate travel or circulation patterns between spaces; those connections should be coded by using heavy or multiple lines for important or heavily traveled connections and lighter connecting lines between spaces where circulation adjacency is less important or less traveled.as well using colors.
- It is a good idea to have the circles approximately proportional in size; ideally, a circle representing a 300-square-meters conference room should be about three times the area of the circle representing a 100-square-meters office.



Mech.

RECEPTION

WORK

The bubble helps diagram make the connection between basic <u>spatial</u> **requirements** fully and а drawn out floor plan. It is a trial and error method of exploring **configuration** and relationship options.



Spatial Relationships space within a space spaces linked by a common space adjacent spaces interlocking spaces

### 4. Spaces Arrangement (spatial & Organization)



How can spaces be related to one another?

- Space within a space
- Interlocking spaces
- Spaces linked by a common space
- Adjacent spaces



### Organizing the space

You can consider a varying forms of spatial organization, some of which are more naturally suited to particular uses than others:

- Centralized organization
- Linear organization
- Radial organization
- Clustered organization
- Grid organization





5. Zoning (horizontal & Vertical)
(public, semi-public, semi-private, private)
(Active, Quite)

(Day, Night)
(Old, New)









### Vertical





A. Blocking Plan

4th FLOOR	DIRECTOR DIVISION #2 DIVISION #2		DIVISION #1 DIVISION #1 DIVISION #3	
3rd FLOOR				
2nd FLOOR				
LOWER LEVEL	CAFETERIA	ADMIN. SERVICES	RECEPTION	TRAINING CENTER
GROUND FLOO	PARKING	LOADING	MAIL OOM & RECEIV	MECHANICAL







#### Figure 4.5

#### Combined kitchen with dining area



(Guidelines for the design of centers for street children, 1997)

## 6. Circulation

### **Developing circulation**

How people move around the building from room to room is just as important as the destination.

When developing a circulation structure we can look at a few basic principles.

How efficient is the circulation in getting from point A to point B Is the circulation discrete? What is the fluidity of the circulation? Is there a smooth flowing route or a more direct route? Does the circulation route clash with furnishing requirements?





### 6. Circulation

Different layout of the circulation for arranging the floor plan

(Neufert Architect,2012)

or arranging the internal spaces there are different layout of the circulation.

Figure 4.13

Figure 4.14

Single block





(Neufert Architecture, 2012)



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### 3. Standards-Space Requirement

### Standards-Space Requirement of each part (Dimensions, Furniture, & Measurements)

Specifically, first you should be competent in planning typical residential spaces (kitchens, bathrooms, powder rooms, and laundries) and typical nonresidential spaces (public restrooms and small serving kitchens). To a lesser degree, you should be familiar with such nontypical spaces as network server rooms and scientific laboratories.

•









L - SHAPED KITCHEN W/DINING AREA AREA: 10'  $\times$  15'



L - SHAPED KITCHEN W/ CENTER ISLAND AND BREAKFAST BAR AREA: 10' × 13"





(a)

SCALE 3/16" : 1'

SCALE 3/16" : 1'

### LINE CONTROLLER PRINTER COMPUTER AREA ..... STATION ACCESS CPU PLOTTER WORK TABLE STORAGE

Illus. 3–4 Specialized equipment— Intensive spaces. (a) Mail/copy; (b) control room with plotters and computer station

### nontypical spaces

(b)



# SULAMANTIONAL CALLER

### Barrier-Free Design Standards (Universal Design)

Space planners must know how to accommodate people with physical disabilities, from minor (the early stages of aging) to major (wheelchair users).

This accommodation can be addressed from varying viewpoints:

(1) philosophically, in terms of satisfying a human and social need;

(2) legally, referring to code requirements that must be fulfilled;

and (3) pragmatically, insofar as barrier-free concepts should be seen as a means to plan interior spaces that are more comfortable for all users—often referred to as universal design. Four major areas have particular impact on the planning process:

- 1. Travel and egress
- 2. Toilet and bath facilities
- 3. Residential kitchens
- 4. Furniture planning and placement



for handralls



2. Toilet and bath facilities3. Residential kitchens



Illus. 3–16 Multifixture women's and men's public restrooms



Illus. 3–13 Dimensional requirements for toilet stalls



Illus. 3–14 Dimensional requirements for one-fixture tollet rooms





Illus. 3–18 Residential kitchens

**4.** Furniture planning and placement







Illus. 3-20 Lounge/living room

### > (Dimensions, Furniture, & Measurements)







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- De Chiara, J., Panero, J., & Zelnik, M. (2001). *Time-saver standards for interior design and space planning*. McGraw-Hill.
- Miss Sana Lectures Notes



## THANK YOU