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**Research Article**

# Observatory of Town and Biomimetics For Urban Modeling and Architectural Design of Scientific Space in Landscaped Site.

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## Abstract:

Some modern architectural designs face difficulties in completion ,andthe dificult and complexe shapes lead to an increase in the cost of the project. The irregular urban planning of town creates an imbalance in the urban fabric and causes the functional problems. In this searches using biomimetics , we practice the urban planning of scientific space through projects of scientific use in several branches in a pivotal urban area whose scientific space extends to the eastern suburb of Ouzera Town.

After a brief presentation of an urban observatory from Ouzera Town that enhances the scientifc project, the scientific spaces are disgnated for the rapid exucution in scientific space. The architectural design derived from the plants and biological structures facilitates the urban realization insuring easy practices and achieving and urban form through landscape architecture that is consistent in ecologicaland landscaped area of Ouzera Terriory.

**Keywords: Biomimetics. Landscape architecture Ecological Town Observatory Urban design**

## 1. Introduction

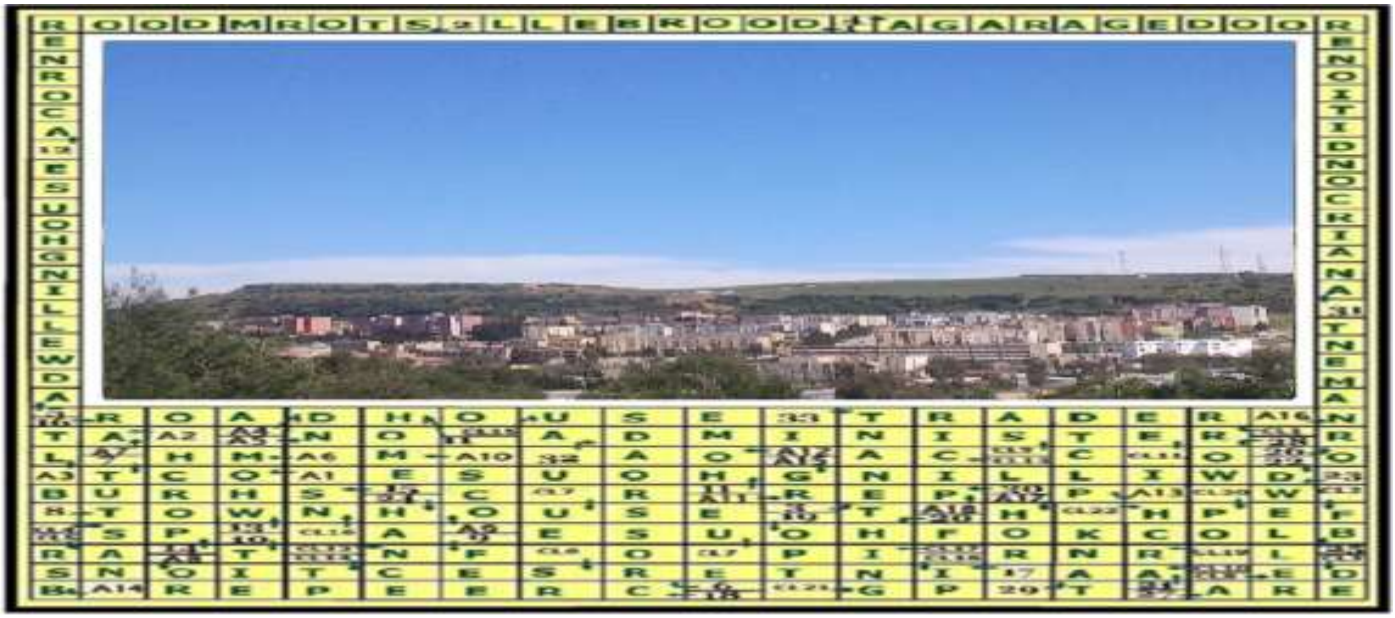
The local plan onurban planning of territory for horizons of 2030 to define the heath zones in the wilaya of Médéa. And we find the region of Ouzera in the hillocks of Titteri extending to Blidian Atlas within areas of healthy climate qualified to receive the imporant structures in the façade of North South Motorway suuounding with a view of natural landscaping in ecological area.

Therefore we apply biomimecry to importants urban project in the region a with an urban character and landscape architectureof several faculties of scientific domain of life.

## 2. Analysis of knowledge and scientific context of Town

The vision of city knowledge through urban observatory makes it possible to develop in an urban environment with an urban search of strategic projects for the operations of urbanization and the organization of scientific space of knowledge and research in territory. The knowledge of a city allows urban planner to pursue in the objectifs of developement whose public and private reflexion have an urban interst in all operation of urbanization.

For this interst we present two urban observatories of Ouzera Town which represent a rapid knowledge through scientific playings of wich the city map and the board form of urban playing are an urban presentation tool in the cultural and scientific context of town.



## 2.a. Observatory of urban façade.

The urban observatory represents the façade of town with a model of a door openning onto man view of natural and urban character of Ouzera Town

*OUZERA TOWN : Modeling of Architectural façade (Source.Author.2024).*

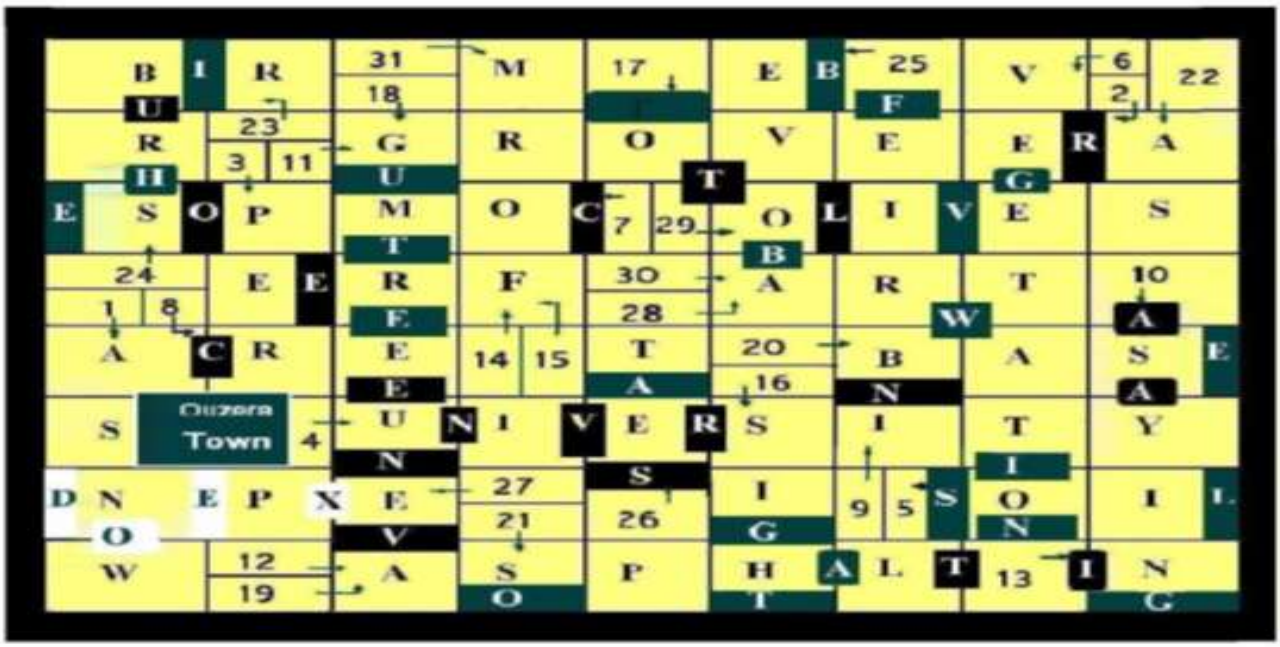
The card of playing summerizes the urban space of Ouzera town.


**Architetural and urban card of urbanization(Source.Author.2024).**

## 2.b. The scientific space Observatory.

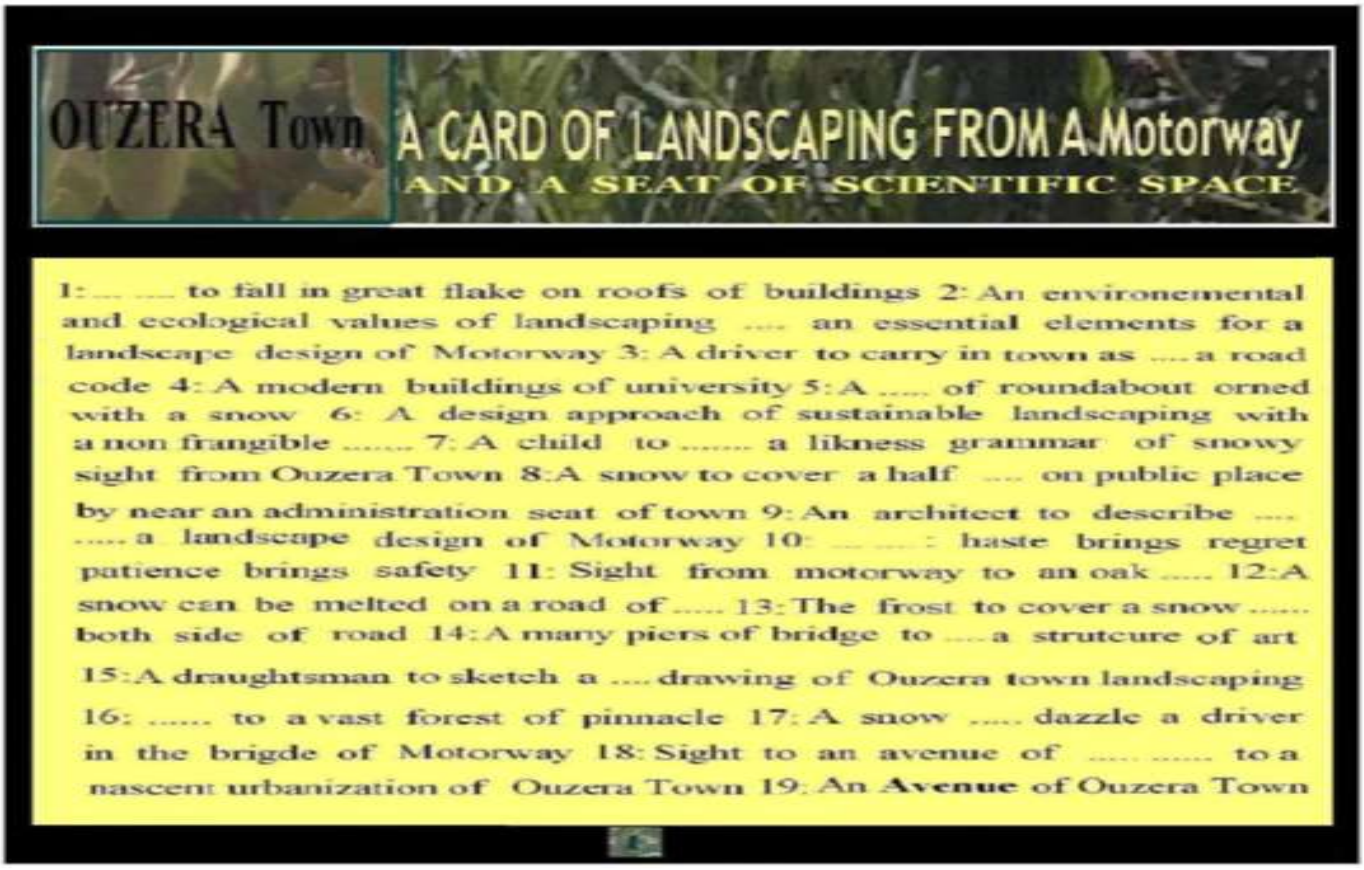
The scientific space of ouzera town is surrounded by a healthy environment with natural landscaping wich makes the healthy climate and the arhitectural façade has an excellent view.

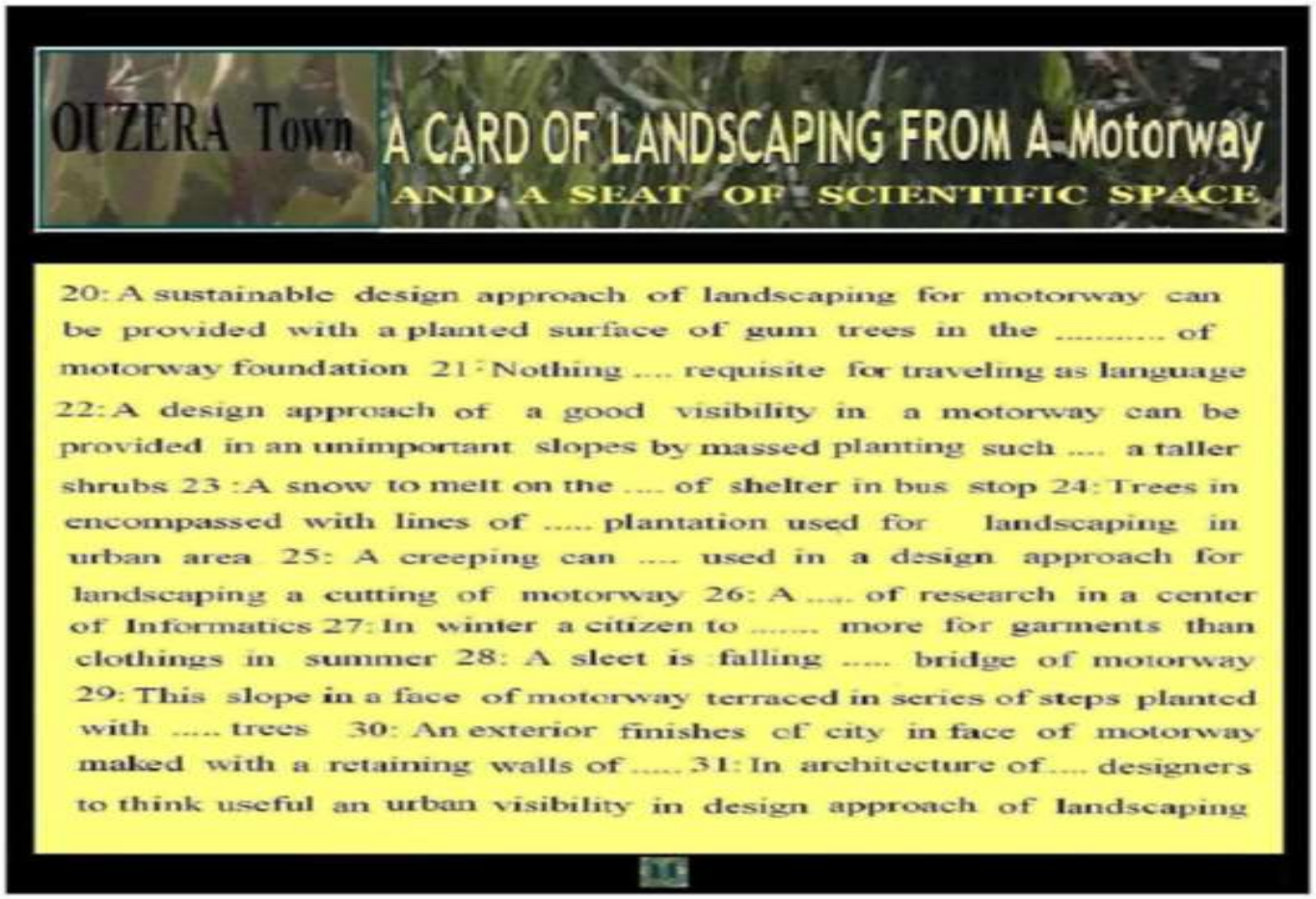
The scientific space observatory represents the scientific pole of Ouzera Town in an urban model with an aerial view.



A Modeling of Scientific Space in OUZERA TOWN(Source.Author.2024).

**The urban cards Of LANDCAPING also summarizes the urban environment through its natural looking façade.**



Tmap of the natural landscaping which represents Ouzera Town in two pages presents in an urban model two views of landscape reflexionof the scientific space of which the road of the fourth generation form the approachable landscaped site in Town.

## 3. Analysis of accessibility to the scientific site.

A photographic observatory presents the landscape of accessibility to the scientific site.whether the current bevels of the landscaped site of the fuctional interchange in scientific site of ouzera to be built.

The observatory with a scientific playing which presents the accessibility to the scientific site is done through a scientific playing model through a form inspired from a topographic apparetus.

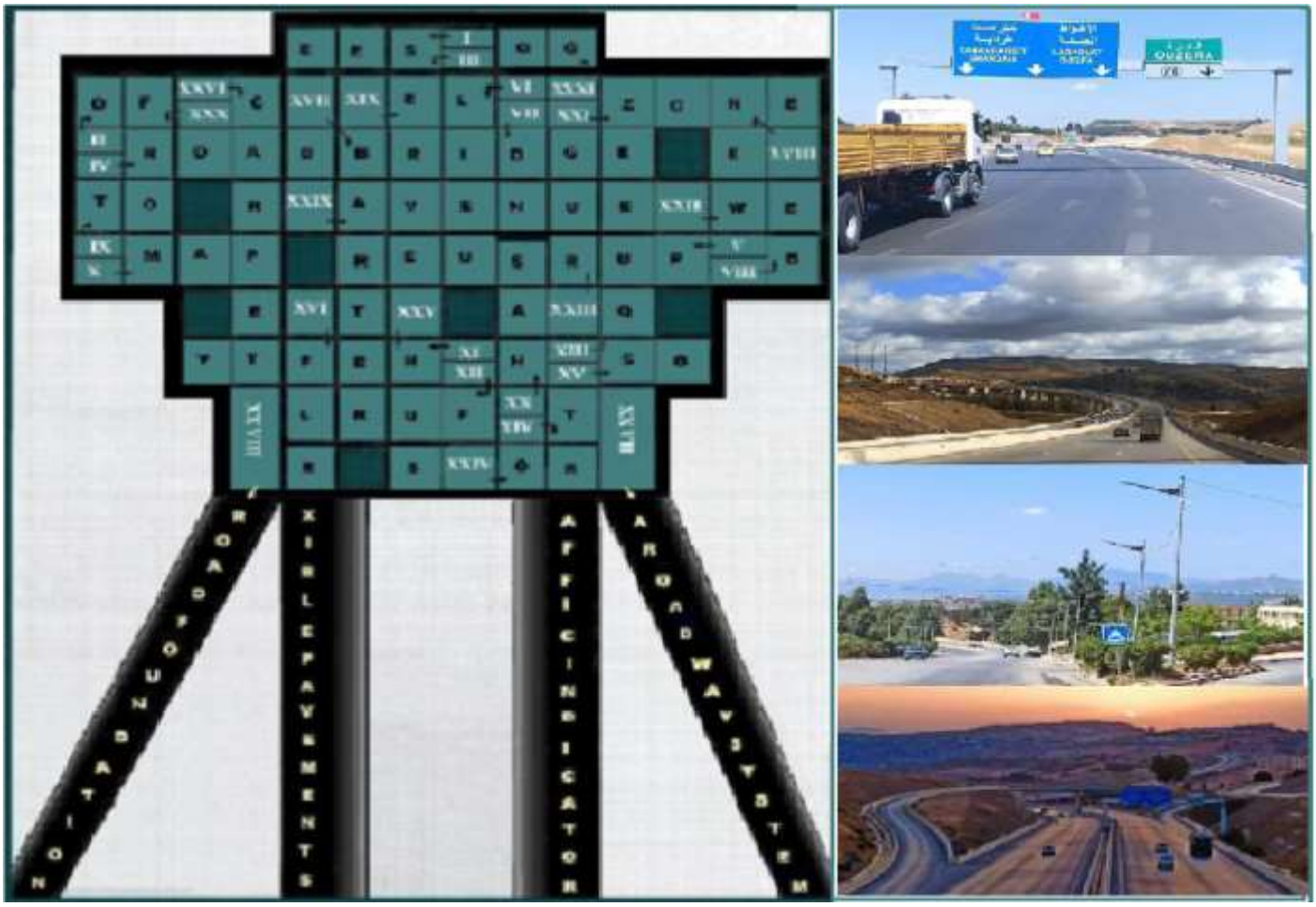
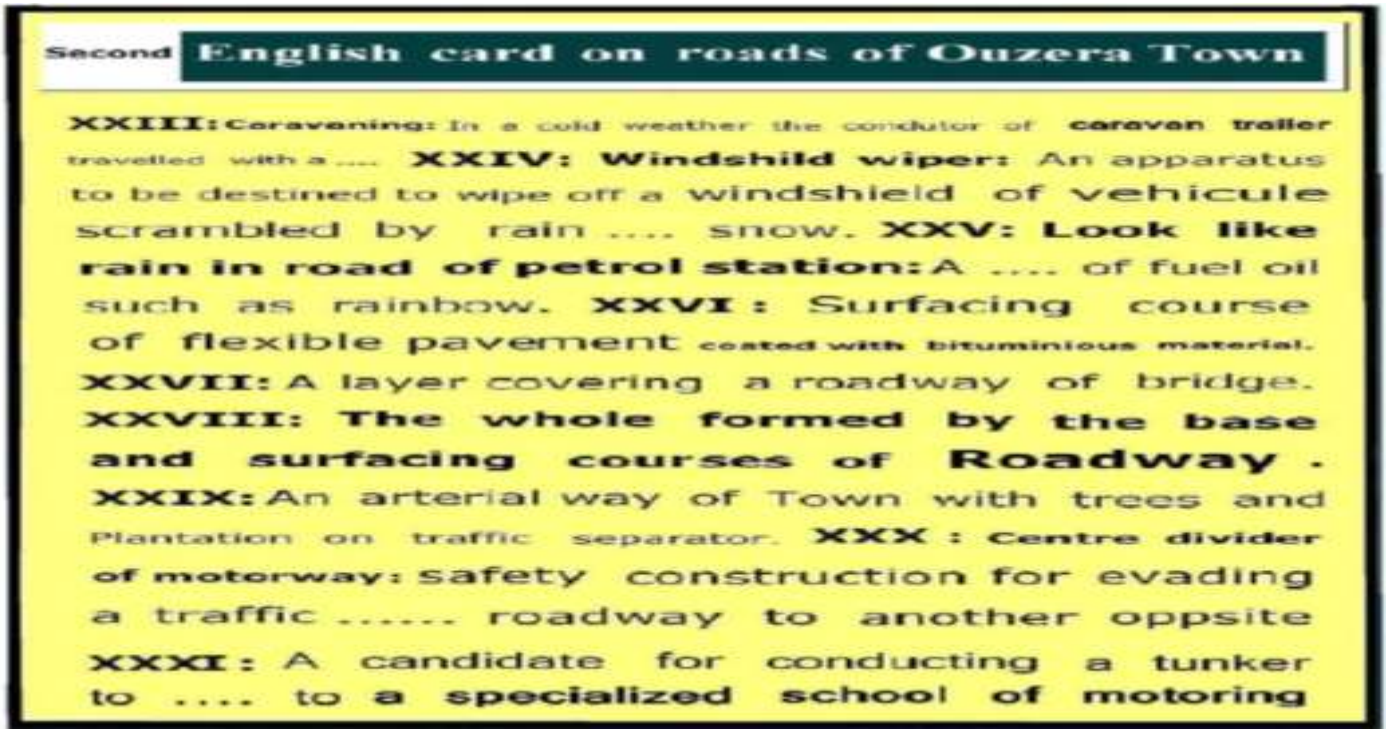



**Fig1 :OUZERA Town .Analysis of accessibity**
**(Source.Autor 2024. **)**

The reading notes in in the card of roads analyzes in two pages the infrastructure of Ouzera Town.




The observatory of Ouzera Town through photography and scientific playing analyzes the infrastructure of scientific site and the accessibility to Ouzera Town through a flexible trafic..

## 4. Urban modeling of accessibility for space of health

The ecological value of Ouzera territory and the density of town favorable to the proper functioning of public equipments offers to the scientific pole an urban advantage for a space of town favorable to health.

The current accessibility to Ouzera town is through motorway in one direction.whether from the north west or the south east.

For a fuctional of motorway accessibility with a scientific site of health.an urban model of interchange at the bridge of Ouzera offers an urban dynamics and a flexibility of access to the university hospital,the scientific university pole,the Arboretum, the bus satation and Ouzera Town.

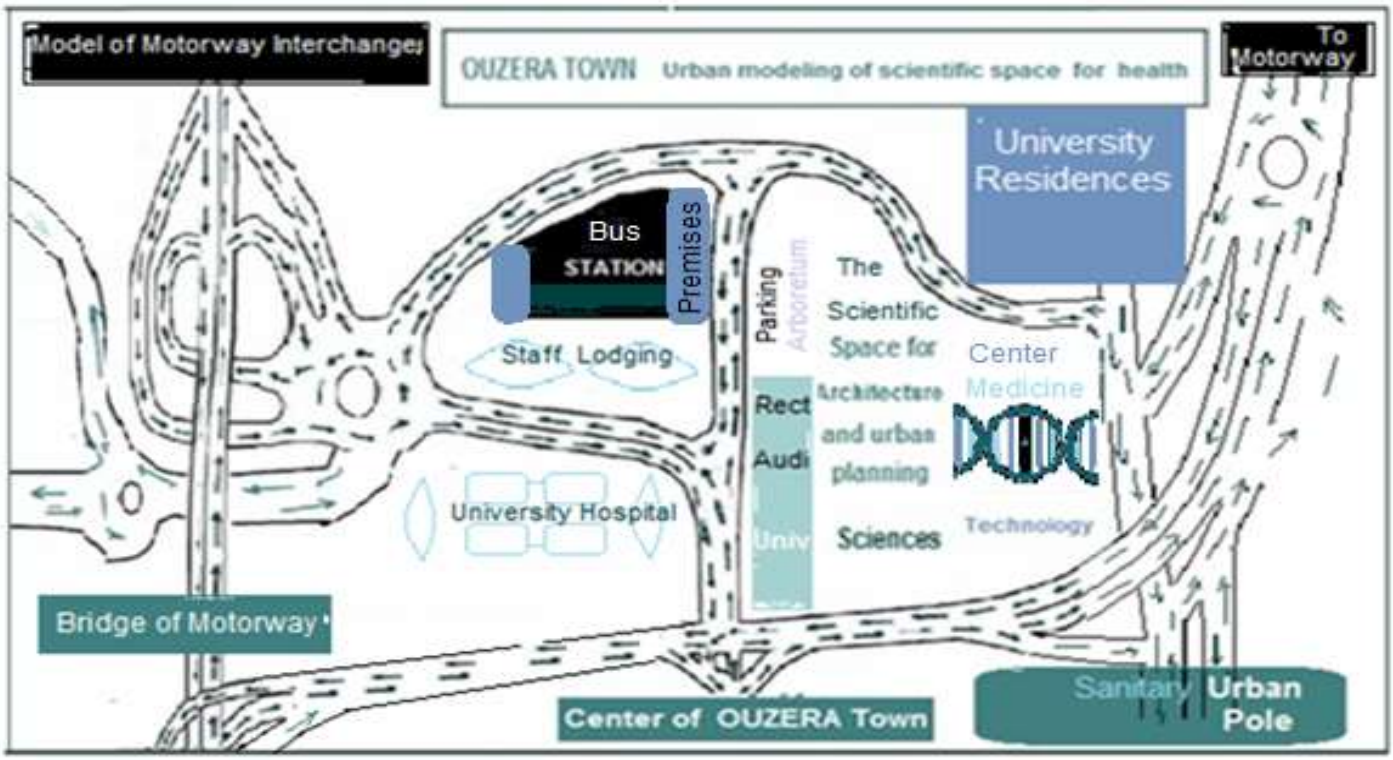


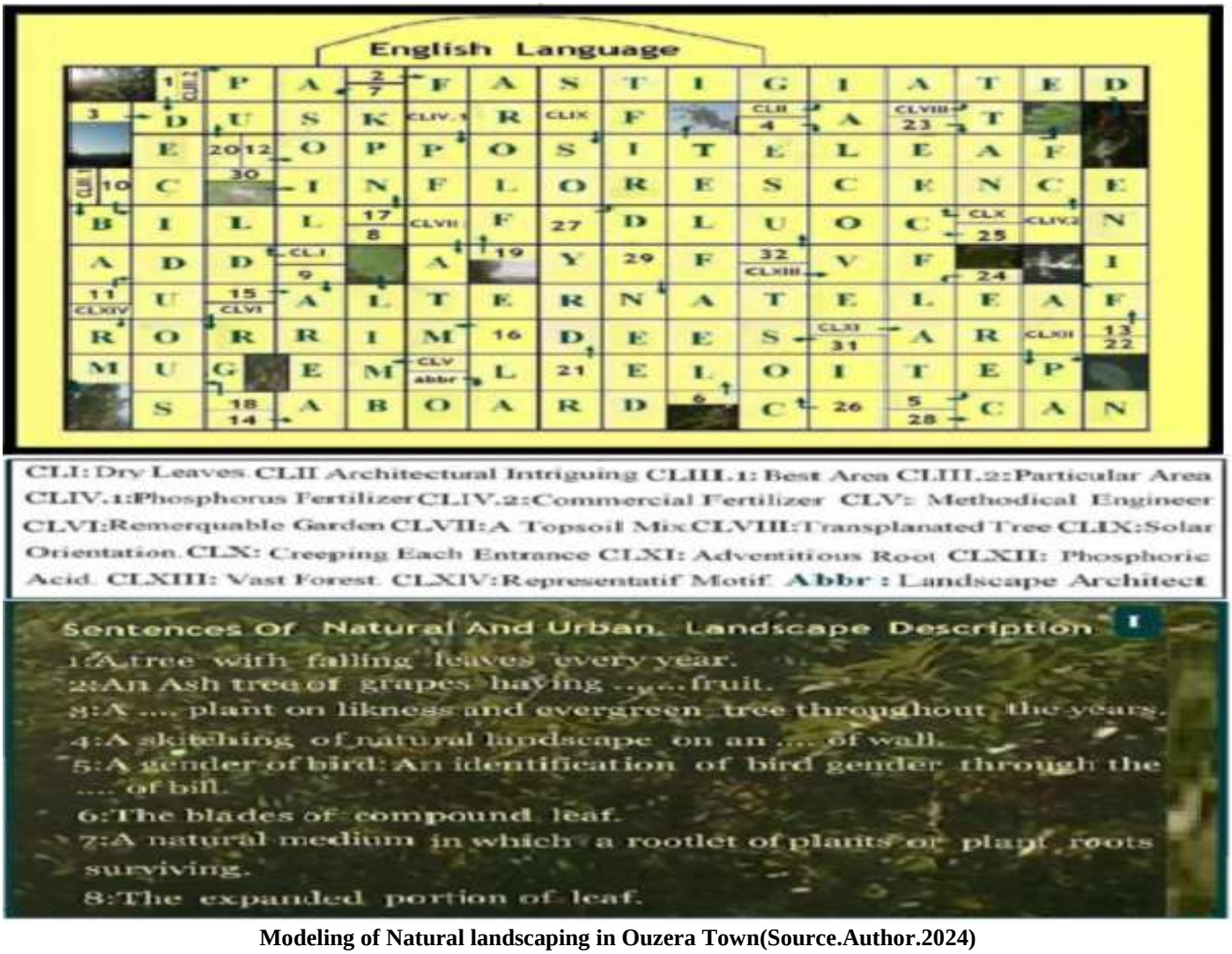

**Fig2 :OUZERA Town .Model of Motorway interchange**
**(Source .Author.2024)**

## 5. Site analysis and observatory of Aestetic aspect and natural environment.

The anaysis of the urban site of Ouzera in its suurundings is carried out by a photographic observatory of the natural and urban landscape.

**Fig 3 : Ouzera Town. The photographic observatory (**)**

The aesthetic aspect of the natural landscape photos where the plantation is a nature of modeling through words and likness in board of scientific playing and a lacture notes.



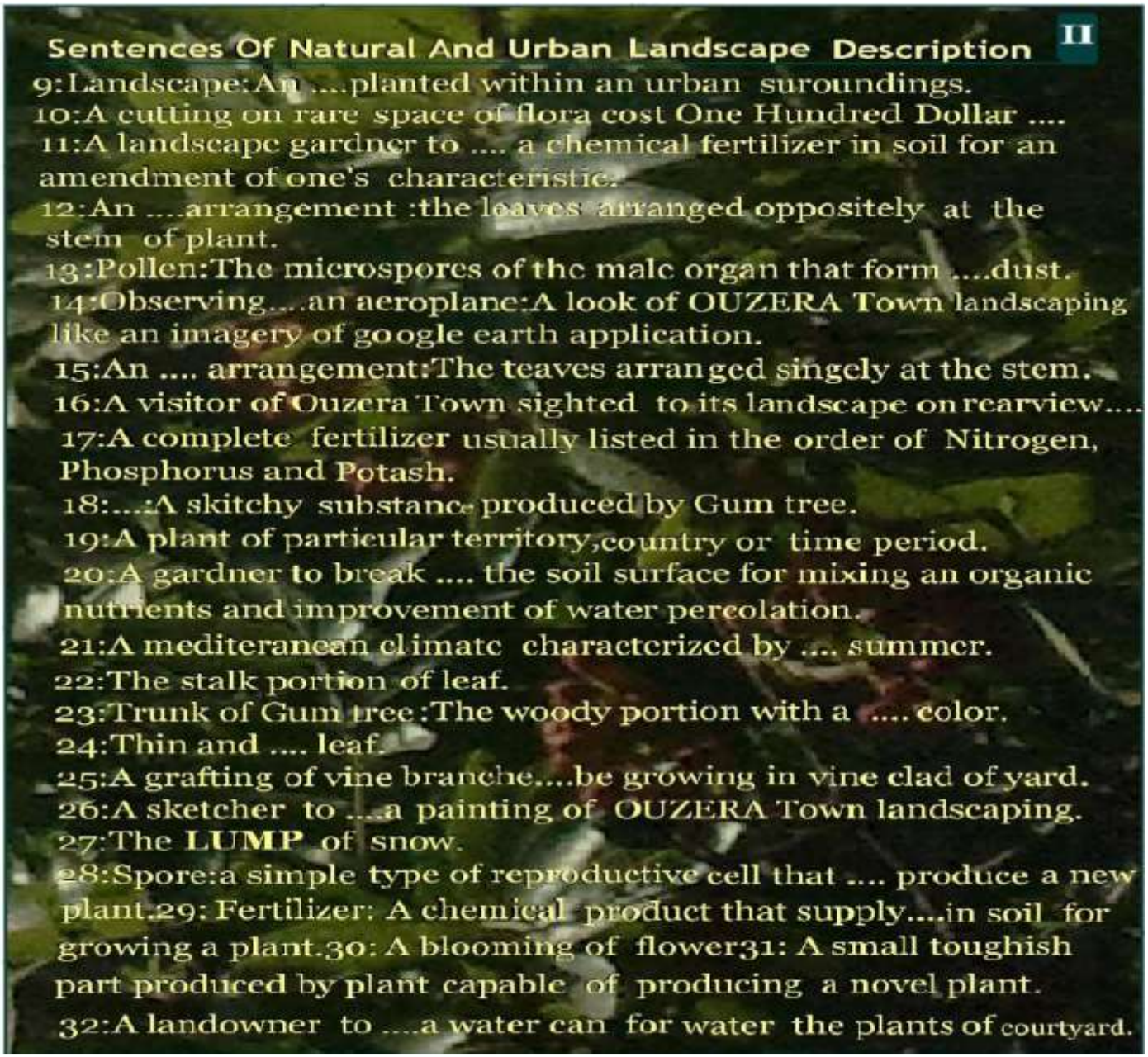

**Modeling of Natural landscaping in Ouzera Town(Source.Author.2024)**

The urban playing presents the aesthetic aspect of natural environment of Ouzera Town through likness and words in lecture note who analyzes the site from a gardening and landscape architecture sights.

## 6. Biomimetics and urban modeling of Arboretum in space of health.

### 6.a. Biomimetic approach.

Biomimecry applies on the global scale of landscaped space.
The idea of design is interested in the form which guaranties the healthy function in an ecosystem present in urban nature.




The project is inspired from the plant world.where the olive branch is a source of design for a botanical urban model which brings together a collection of trees and shrubs in a relaxation space open to patients far from urban noise in condensed agglomeration of cities and is an educational place allowing citizens and scientifics to use the arboretum as a site to knowledge of plants and forest species.

### 6.a. Description approach to the project.

The project consists to planting 755 spicies which cover an area of approximately 2 hectares in an urban site favorable to health.
The landscaped aspect of the arboretum is provided by approximatly 675 types of flowers and fragrant plants.
The pergola passage ensures a extended view towards the arboratum collection in fragrant path.
The arboretum exposes the collection of trees on the main of façades with shilters of exhibition.
A sheltred place intended for the gardener to maintain the greenery of trees .shrubs and flowers and as well as fruit trees.

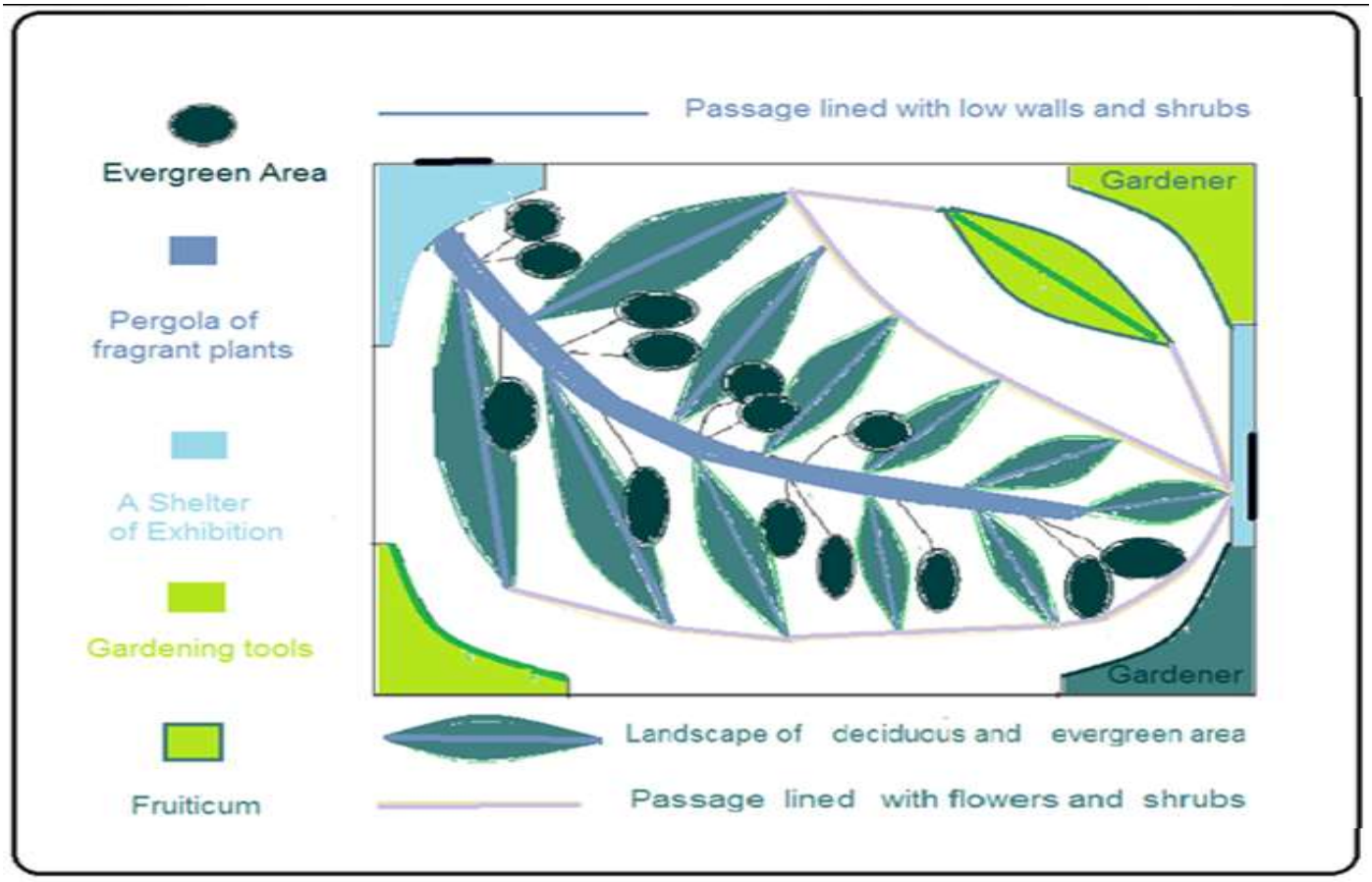
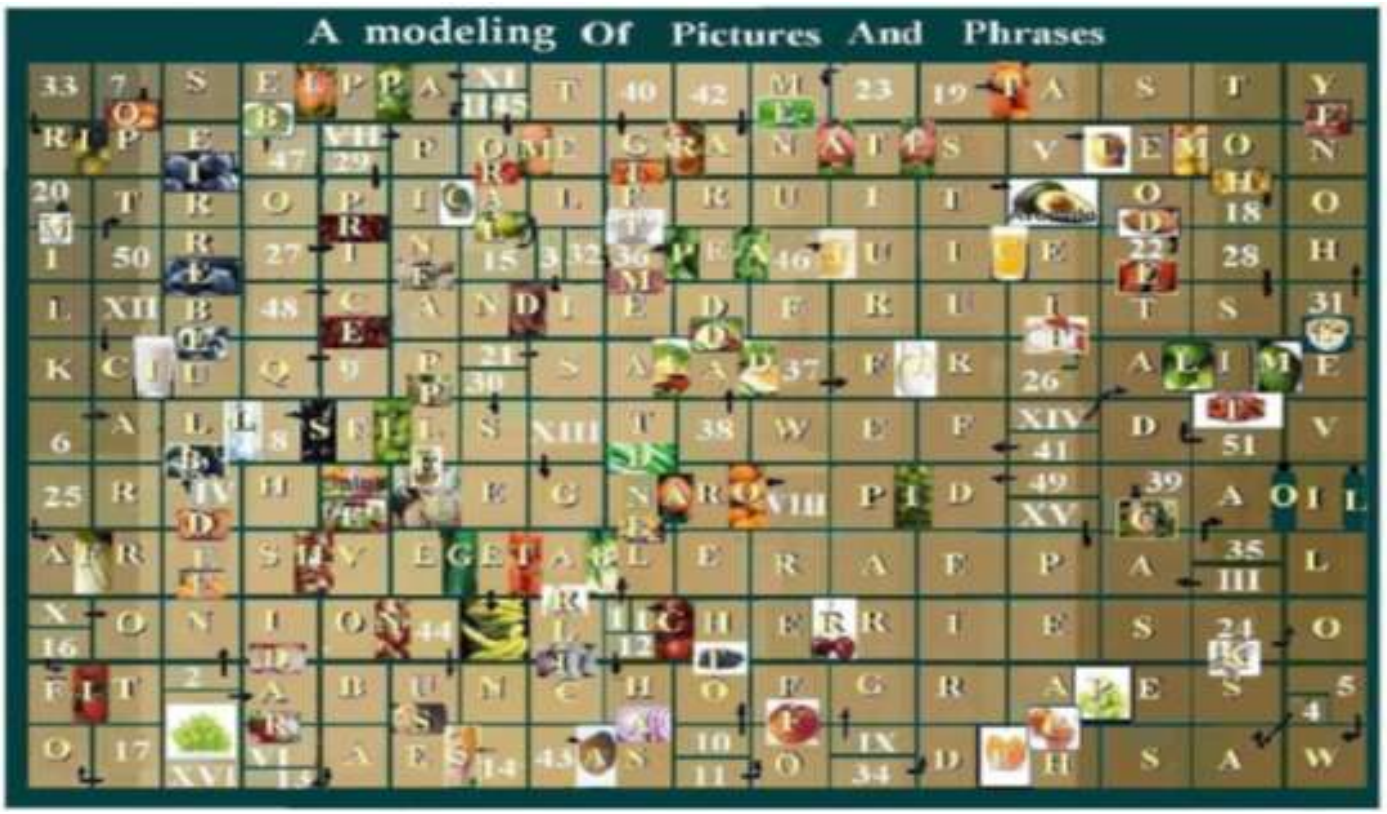



**Fig 4 : Sketching of arboretum in an aerial view(Source.Author.2024)**

## 7. Observatory of sanitary culture

An observatory on health and aliments in the territory of Ouzera summarizes the cultural origin in the region.
The board of scientific playing shows by vocabulary the wealth in an urban model of scientific culture of children.
The climate of the ecological region and the territoral wealth in termes of forest spicies and agricultural plants makes the Ouzera site favorable to health.



**A Nourishment And Aliments** — **LECTURE NOTES I**

1:A child to .... a picturial dictionary for learning an English vocabulary of aliments 2:We find .... elements in vegetables 3:A beet .... a fresh vegetable. 4: A teacher to.... a child to describe a nourishement of health. 5:A child to eat a ..... fruit. 6:A water is an unavoilable element for ..... repeast of dinner 7: A cook to .....a recipe based on vegetables and poultry .8: A fruitrer: a trader who ..... fruits .9:A .... aliment for children.10:A fruitrer to expose a muscat grape and an .....varieties of grapes from Ouzera 11:A grand father to ..... a fruit for patient child. 12 : A oinion is an aliment of health and he .... a strong flavor. 13: A cook to put a fruit of olive ..... salad. 14: A platter of ..... food. 15 : A simple presentation with pictures to .... a real description of fruits and vegetables.16:A .... fruit for eating.17: A salad .... cabbage 18:A ..... trumbler of ginger.19: ..... juice of apricot. 20: A complete aliment for toddler.21: Potato ..... 22:A pastry cook .... not use a biting almond. 23:A list of aliments. 24: A plate of ....25:A vegetable recently croped from yielding field. 26:A .... of fruits to addle swiftly.27: An orange: Rich fruit .... vitamin C.

**A Nourishment And Aliments** — **LECTURE NOTES II**

28:A child to ..... down to table for dining. 29:A .....of tropical fruits depended to the expences of transportation 30: A citizen to ..... on label of tropical fruits a source of aliment 31: A ..... is a high carbohydrate nourishment 32: Rich aliment in proteins. 33: A ..... fruits. 34: A prune and raisin are a ..... ..... 35: ..... of olives. 36: A .... soup 37: A didactic pictures ..... nourishement topic. 38: A cook to ..... a salt into a tossed salad. 39: An eating of sprying fruits with pesticide to cause several ..... of deseases 40:A teacher to ..... a scientific book for a major pupil. 41:A ..... of pistachios. 42: a Lemon and a lime ..... citrus fruits. 43: A cooked vegetables such .... garlic and potatoes 44:A citizen to ..... a refregerator for cooling a bunch of grapes. 45: A teacher to make an .... question on an English vocabulary of aliments and health. 46: A grocery to expose a nectar of peach and a ..... of apricot 47:the vegetables can .... eated fresh in tossed salad .48: Crystallised fruits. 49: A fruiter to ..... a quantity of olives in salted water. 50:Fruits growth in regions of tropics.51:A fruit of date tree.

The vocabulary of the board of playing to fill the lecture notes. And a list of fruits and vegetables presents the natural aliments for healthy repast.

## 8.Economic vocations and planning of services.

The economic vocation in the zones of médéa fits within a range of contomporary economic sectors including the services sector. Because the services play an imporant role in the growth of the regional economy.we present the regional Draft of territory development for the horizons of 2030 in the regions of Médéa which explains the devolopment prospects in the region of OUZERA due to its ecological nature.

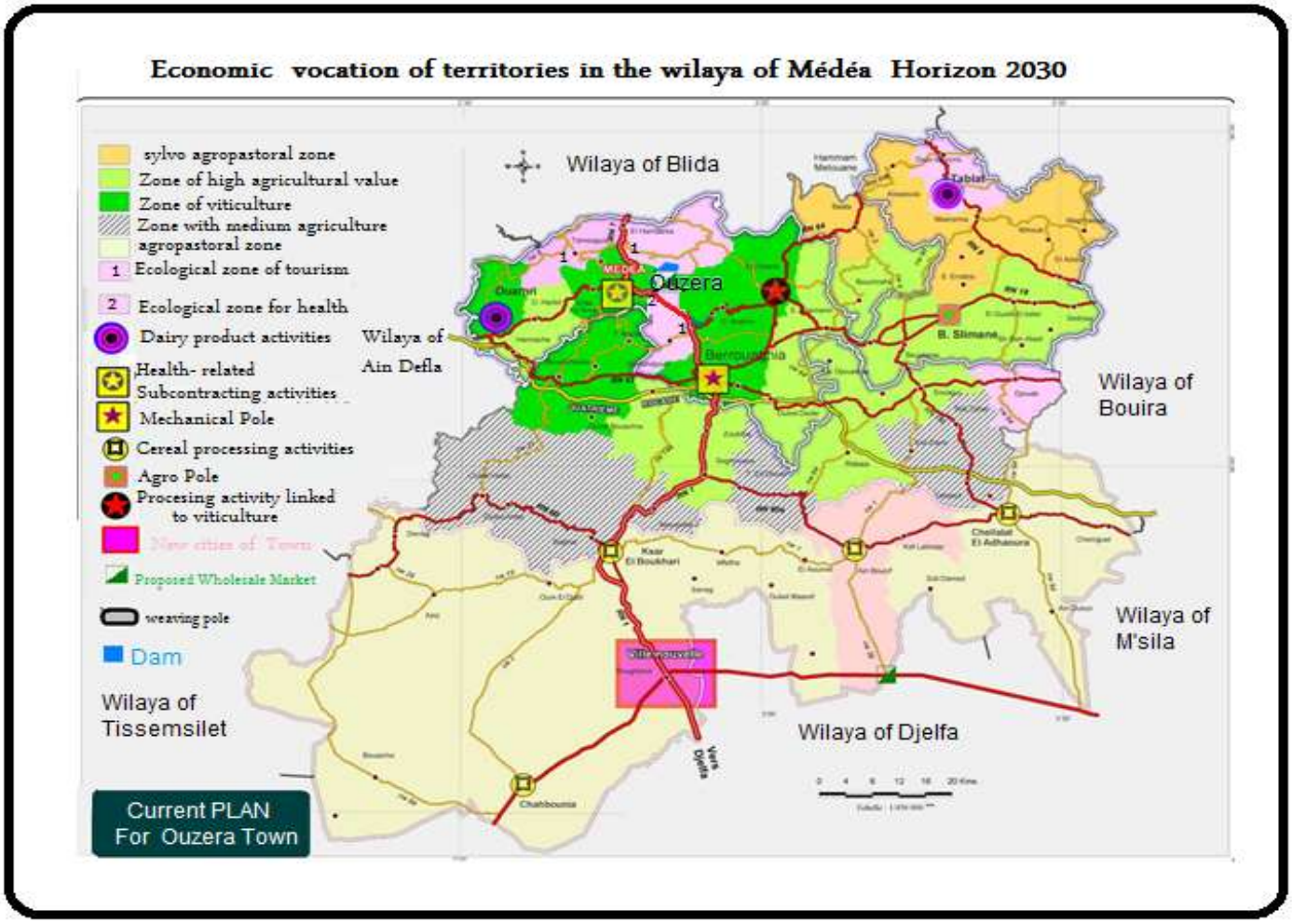



**Fig 5 : Draft of Regional development for Médéa territory .Horizon 2030 (Source*.English form realized by Author.2024).**

Health sevices in the region are developed by inveding in the human element in the scientific pole for the sake of national development served by scientific branches that are compatible with the environment of healthy climate and naturel landscaping.
The economy of regions is also driven by the permanent presence of water with a construction of dam in Ouzera region for a development of agriculture in large scale including cotton cultivation.
The textile pole adjacent to the urban pole of Ouzera attracts lobors and stimulates researches in scientific and technological branches.
The trade services by establishing a wholesale market of fruits and vegetables provides the regional territories and eases the exchages.

## 9. Modeling and design of urban faculty of medical sciences inspired from genetics

### 9.a The idea of project.

The principle is simple and is inspired from genetics for a functional distribution of scientific space with the landscape aspect. The form of DNA which presents the faculty of medicale sciences in an aerial view is a vector which allows in genetics the transfer of DNA into a host cell.

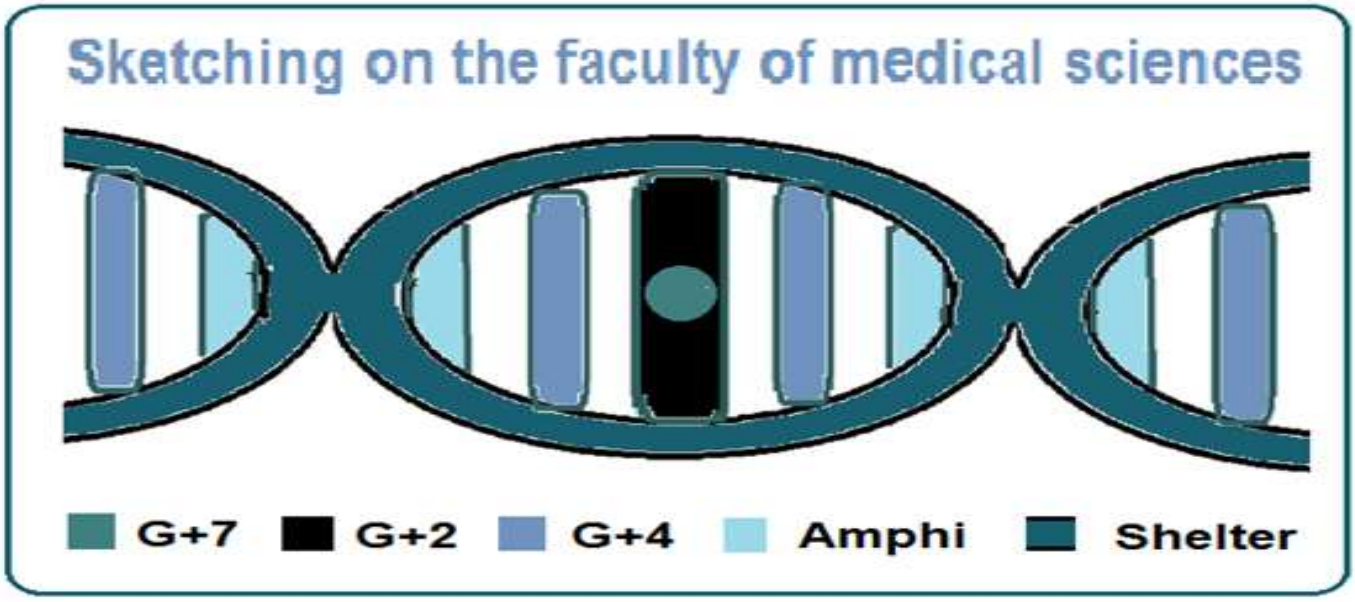
### 9.b Project display.

The set of structures is designated to integrate into the urban context of scientific pole in Ouzera Town.this is thanks in particular

to a concept inspired from genetics.

It stands out for its natural and fuctional form and the environmental performance of its environment with a biotopearea factor of up 0.4. This project contribues in the development of the health strategy and has a scientific role in the composition of health specialist in the 3rd cycle .

The palm trees traces the landscape lines of the shelters through a descriptive approach of project




**6 :Urban model of medical faculty (Source.Author.2024)**

The faculty of medical sciences designated in an area of more than two hectares and accomodates 4000 places in 4 blocks of G+4 oriented to the north/South views.

There are 4 amphi of 250 places in the entire structure and a mega medical library which accupies 4 floors in the administrative block of G+7 to manage scientific life in 4 departments with 16 laboratories in each block of 1000 students, 8 laboratories of research and an audeterum of 450 places in the central block.

We summarize the depatments of the medical faculty.

1.Department of clinical and emrgency medicine spesialized in medicine of sport.

2.Department of cellular and molecular medicine specialized in metabolic diseases .

3.Departement of pharmacy andmedical innovation specialized in advanced pharmacognosy.

4.Department of applied medical sciences specialized in advanced surgical technic.

The façades of the administrative and educational bloks constructed with GRC technic.

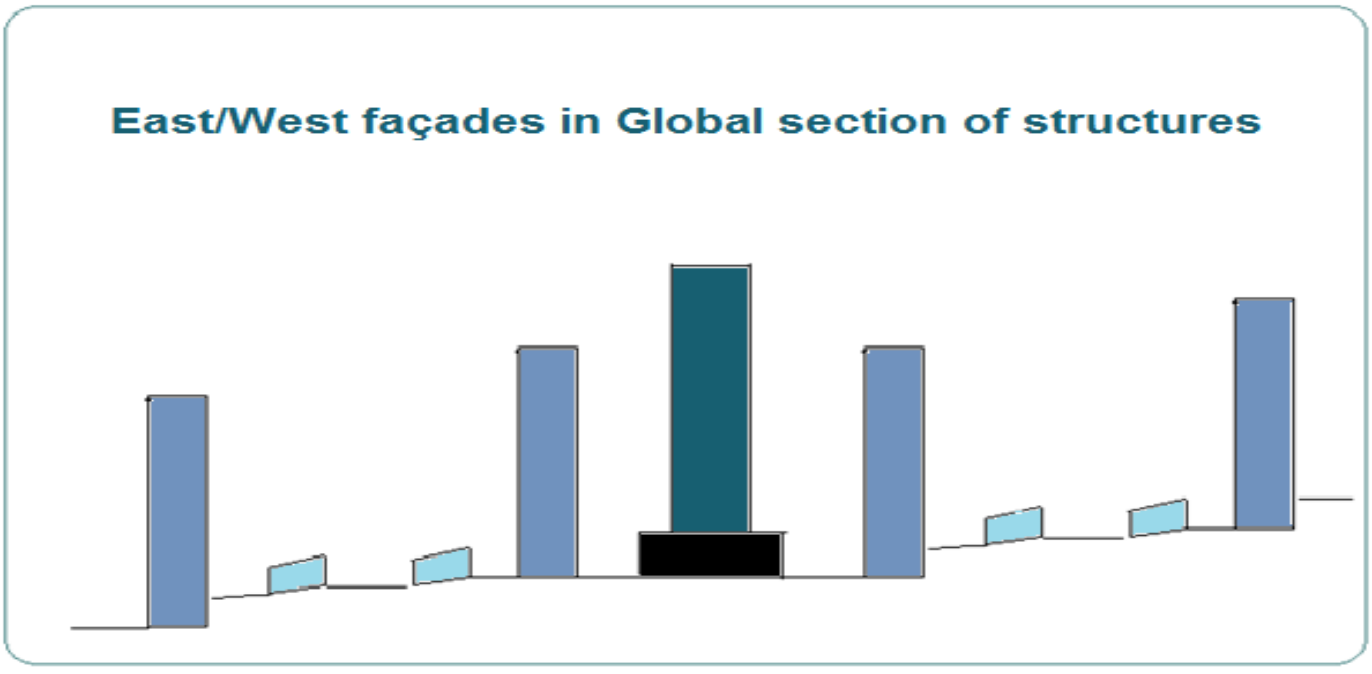



**Fig 7 : Strucures of Medical faculty(Source.Author.2024)**

## 10. Biomorphic architecture of university hospital.

The idea formed in the design of urban space for sanitary uses has visually characteristic form through human and nature.

### 10.a The idea the functional aspect of project

The university hospital has several functional buildings for the medical depatments of 2rd and 3rd medical training cycles whose mass vision is similar to the eye and glasses.

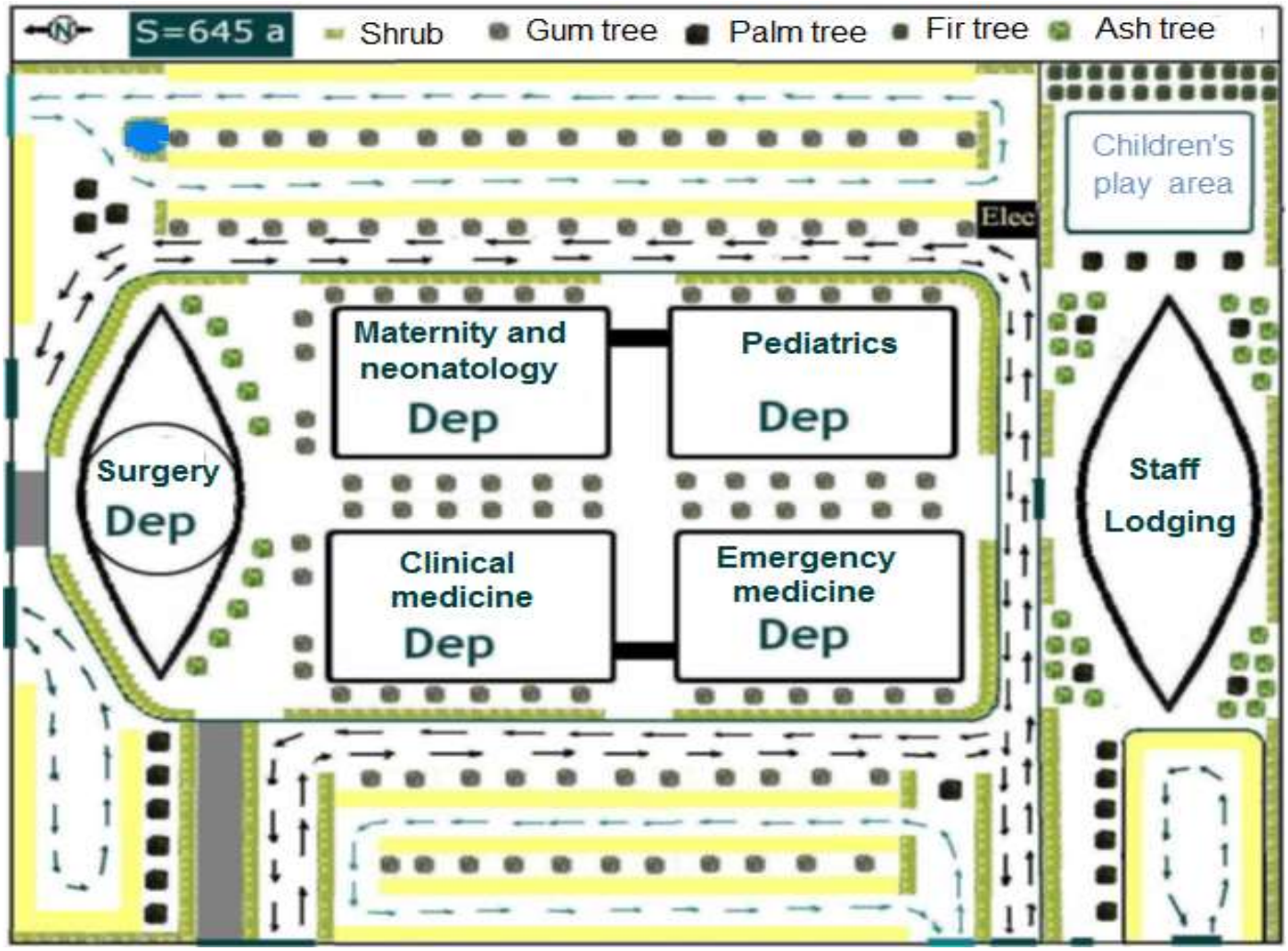



**Fig 8 : University Hospital specilized in Minimal invasive surgery (Source Author.2024)**

the central alley between the departments is bordred by a green space where the gum trees forms the ecological space of the university hospital.

The traffic between the departments is in both directions and the spaces of parking reserved for ambulances in a front of depratments are planned.

The circulation of visitors' vehicules is one way in two parkings areas with Gum trees planned for 195 cars.

### 10.b Descriptive aproach of university hospital

The university hospital is made up of 4 medical and surgical depatments with a total capacity of 645 beds and places as well as 250 beds for educational places. The interior Architecture and equipements isdoneaccording to the standard specifications.

**Department of Clinical Medicine.**

The reception capacity in department is 155 beds and places reserved for the supervision on students of 2 nd medical cycle including the study programs of this clinical cycle in particular.Ophtalmology.Dermatolory.

ORL .Orthopedic .Rhumanology .Urology.Cardiology.Traumatology.

Neurology.Pneumology.Endocrionology.

**Department of Forensic and Emergency Medicines.**

This department with a capacity of 167 beds and places accepts posgraduate doctors in the field of forensic medicine.

**Department of Pediatrics.**

The total reception capacity in this department is 112 beds and places and there are consultation and surgery.

**Department of Maternity And Neonatology.**

This department includes maternity and neonatal hospitalisation with a capacity of 69 beds and places including the equiped floors for surgical operations.

**10.cArchitectural analysis of surgical building through decriptive approch.**

The capaity in the surgery building is 142 beds and places.

The upper floor is reserved for the main direction of university hospital. For the performance of operations in the 4 levels of minimaly surgery. 16 operating stations ensure the reception of women and men in the following services : .Ophtalmology .Orthopedic .surgery.heart surgery.neurosurgery.thoracic surgery. Urology.

The internal circulation guarantees an optimum functioning in the following domains .Auscultation and treatments.Care.lodging and social function. Education and trainng .Administration and managment.Scientific information and research.Supply and cleaning.

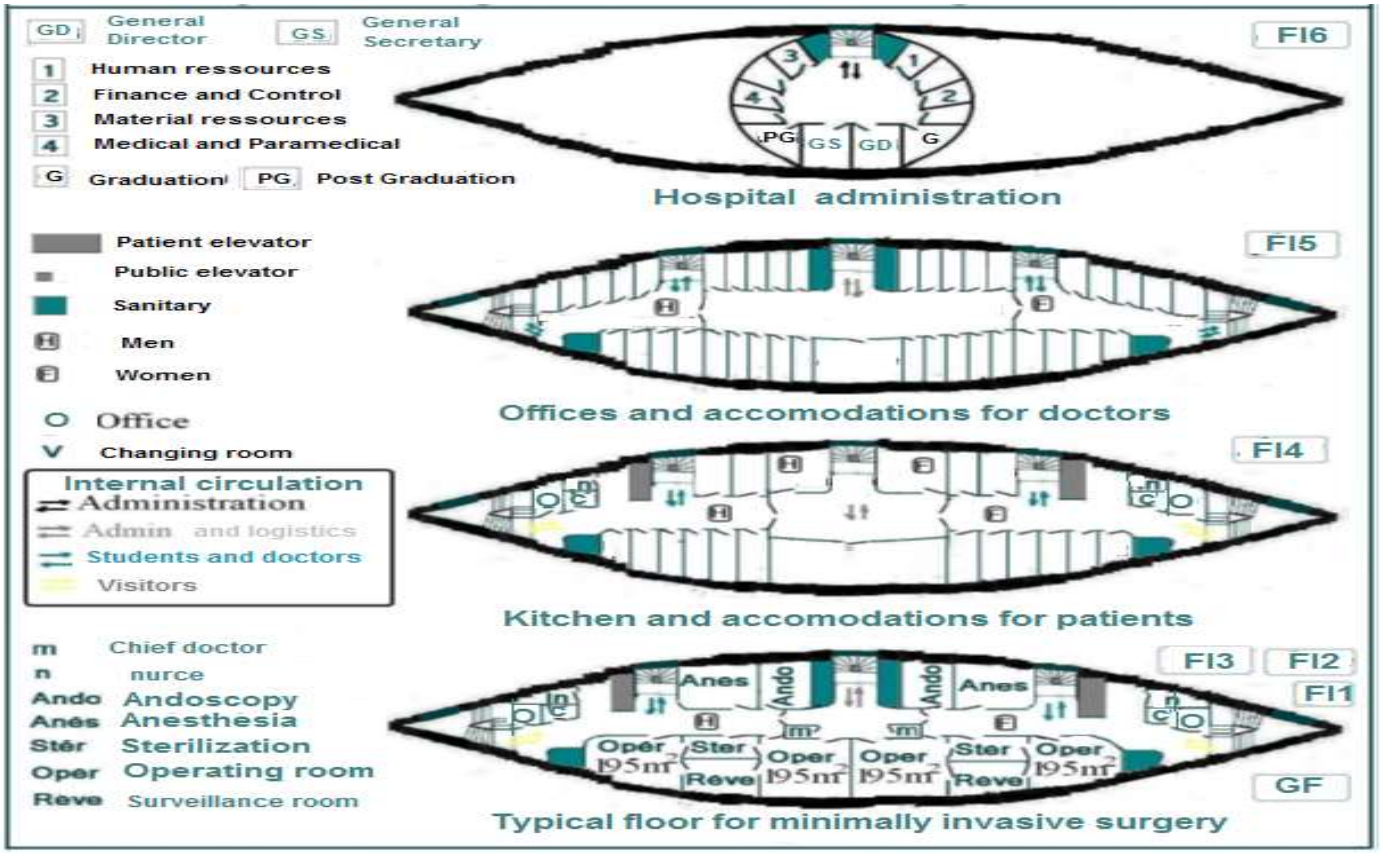



**Fig 9 : University Hospital :Internal circulation in Surgery department (Source.Author.2024).**

The basement of the sanitary building is reserved to the morgue

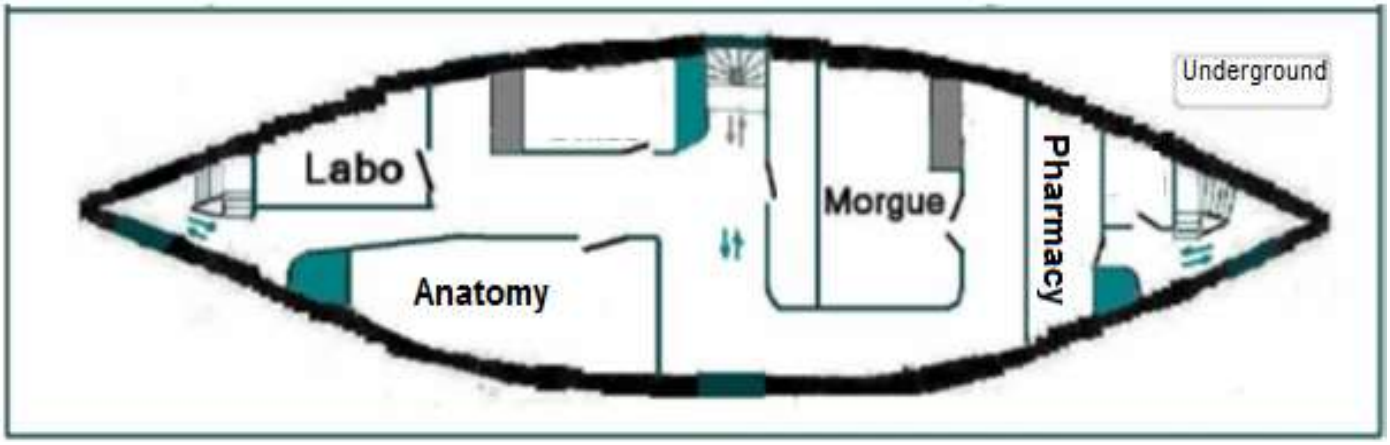



**Fig 10 :Plan view of basement ;Minimally invasive surgery block.(Source.Author.2024).**

**10.d .Apartments for specialist doctors**

The building designated next to the hospital in the form of an eye for a num in an overall urban view for a number of 40 specialized doctors.

The apartments is in F4 ensures the proper functioning of medical services and offers and organized sanitary environment.The biotope area factorof the university hospital reaches 0.4 by shrubs flowers and trees .

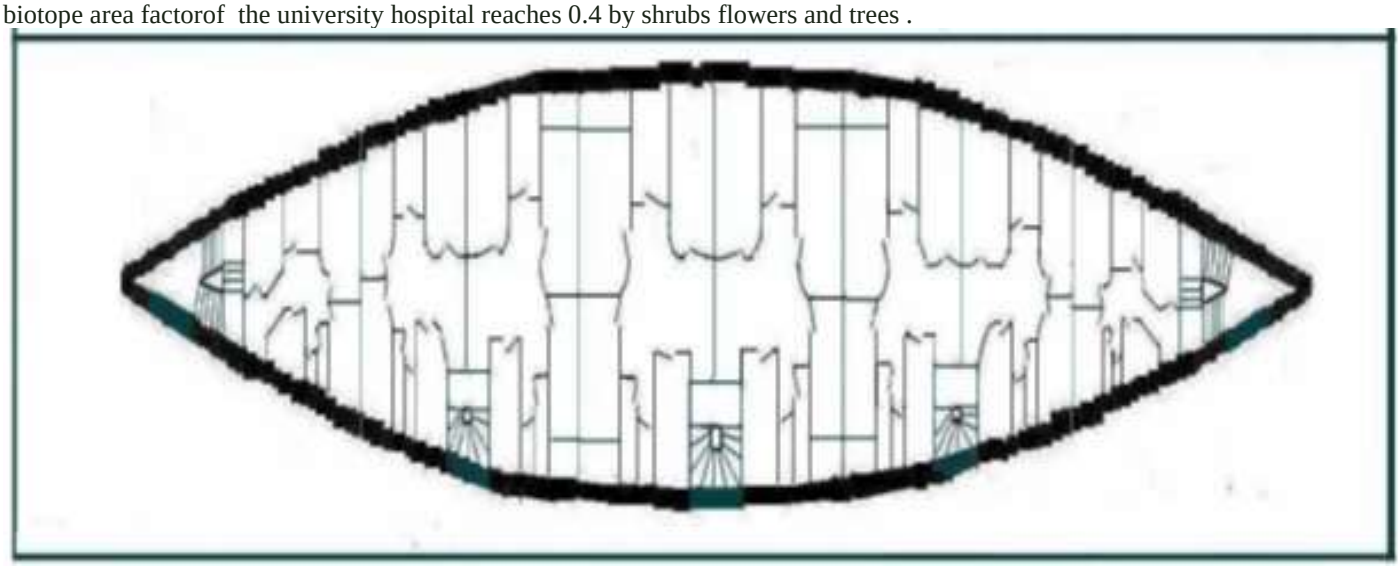


**Fig 11 :Standard plan of floors ; Staff lodging in G+4(Source Author.2024).**

## 11.Urban modeling and architecturel design inspired From plants.

### 11.a.Model of dattes for design Of university city.

The model is inspired from the dates branch.the entire residence can accomodate one thousand academics with in 5 pavillons. Each floors in each block accomodates 40 students in 20 rooms and 8 individial rooms in upper floors .The façades is decorated with rows of palm tree motifs made with special materials which fuction as city lighting.

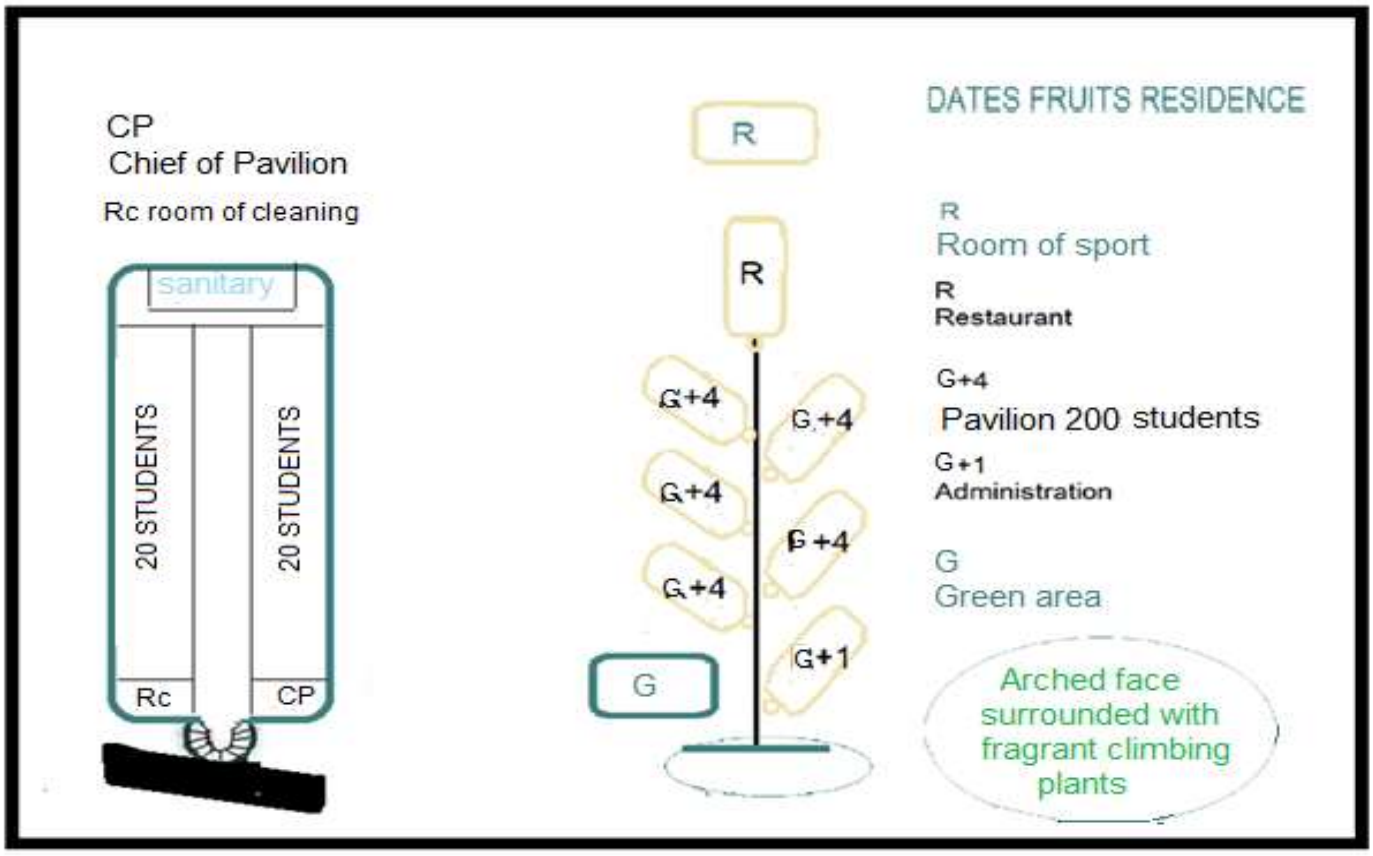



**Fig 12 : Model of dates fruits university residence(Source.Author.2024).**

### 11.b..Model of cereal for urban and architecturel design

The model of university city is inspired from a sheaf of cereal for a city of 1000 students distribued in 5 blocks of 200 beds each floor accomodates 40 students and 16 reserve beds in the 4 upper floors of each block.

The façade is in alucobond with decorative patterns in special materials in the form of weat with lighting of face which form the shape of the city

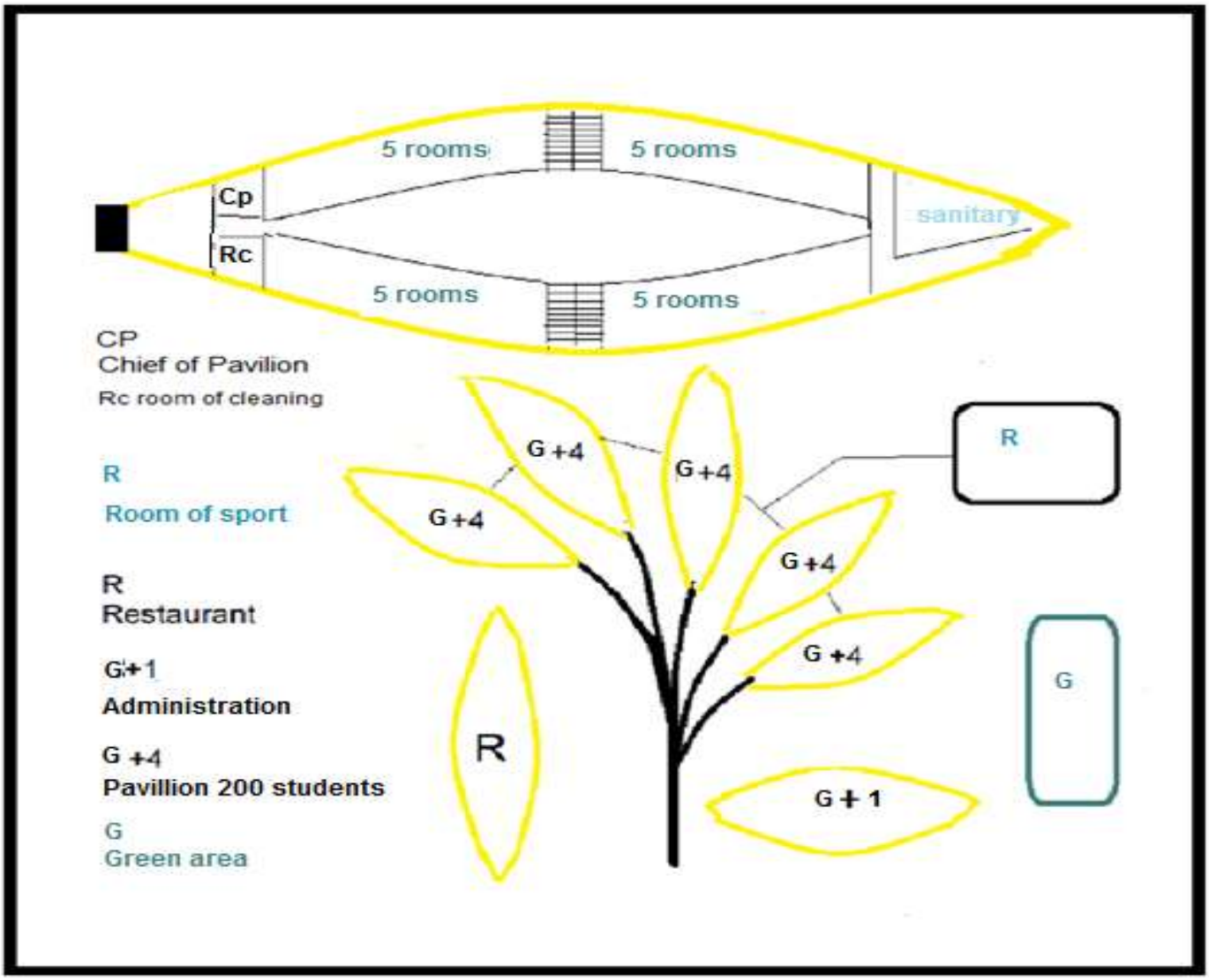



**Fig 13 : Model of cereal university residence.(Source.Author.2024).**

**12.Scientific space of Architecture and urban planning .**

The university space combines sciences ; technology ; drawing art and moern technologies in the same time.
Students learn and research in this space within the departments of faculty and research center attached to it.they learn knowledge related to landscapes and plants ; principles of urbanization ; building techniques and planning ; managing outdoor spaces in a functional and aesthetic vision.

**12.a..Landscape and urban project**

The ecological choice of local flora to develop an ecofaculty of Architecture and urban planning makes it possible to create a landscape space varied by an ash trees and an evergreen trees of wich the plan is the plant species which forms the clump of trees suurrounded by a colonnade with climbing plants.
The plan of the ecofaculty forms in mass a sea of an ash trees surrounded with terebinth trees.
An ecological landscaped aspect of the ecofaculty is provided by several climbing plants for an evergreen façades.

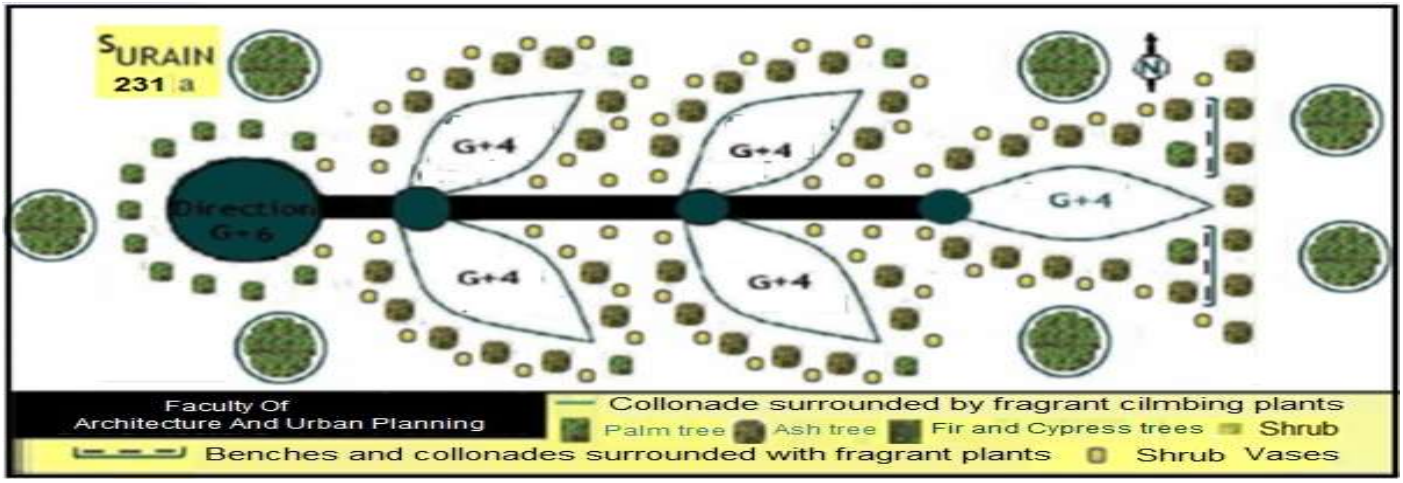



**Fig 14 :Landscape design :Faculty of Architecture and urban planning (Source.Author.2024).**

**12.b. A Functional structure of ecofaculty**

This structure of the functional assembly offers to students architects and planners an environmental space of working in the workshops with an urban view towards the plan of collonades and benches.and the views of natural landscaping from the administration block and the block of classes towards the healthy arboratum.

**12.c. Summary description of project.**

The project forms in plan a leaf of an ash tree and has 4 blocks to make the branches of importance for country whose department are.

* Landscaping and Architecture for public works.
* Architecture for urban buildings.
* Urbanism and ecology
* Landscaping and rehbilitation of town.

Each block accomodates 500 students in an amphi of 250 and classes of 20 students

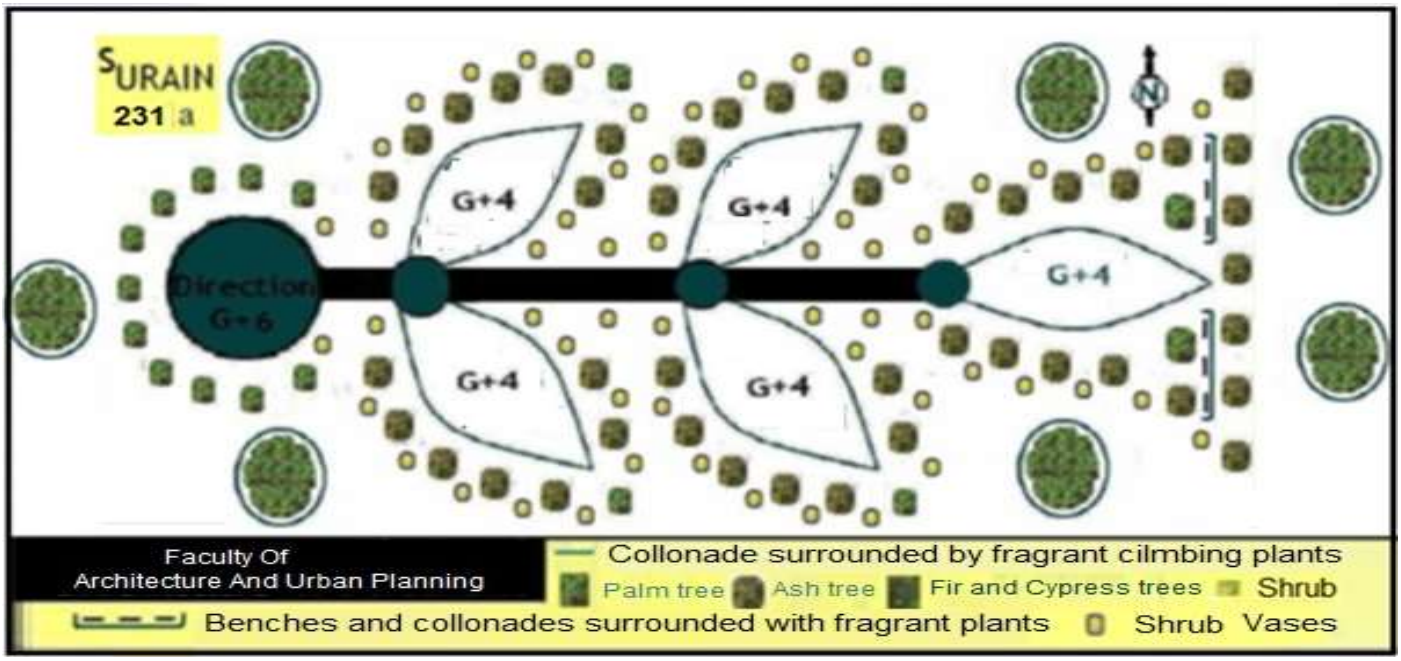



**Fig15 :Modeling of Architectural planes ;Amphis.Classroom (Source.Author.2024).**

The circulation bitween the blocks of the faculty covered by shelters which maintain the functional unity of the designated architectural form.

There is a block of workshops for urban and architectural studies in order to energize students in the environment of mutidisciplinary design.

The building in G+6 whose upper floor reserved for the administration of the faculty and the elevator facilitates an access to the

services on this floor.

In this multiuse block. The laboratories designated in 4 successive floors to carry out scientific work and modeling using computer tools as well as a library to develop the scientific background of searchers and students .In the Ground floor of the building a conference room is designed to organize the academic study days and scientific research seminars.

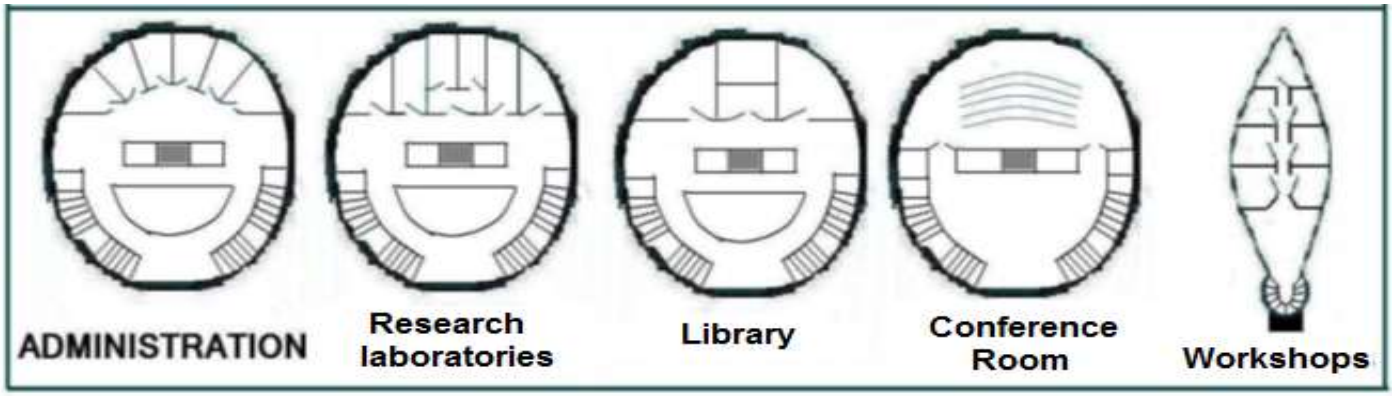



**Fig16 :Modeling of Architectural planes (Source.Author.2024).**

**12.d. Research center of Landscaping and urban ecology for researcher and development**

The research center tends to develop a dynamic research specific to the faculty of architecture and urbanism.its structure and activities are put in place to be able to promote individual initiative.it is positioned more particularly into the transdisciplinary researches between :

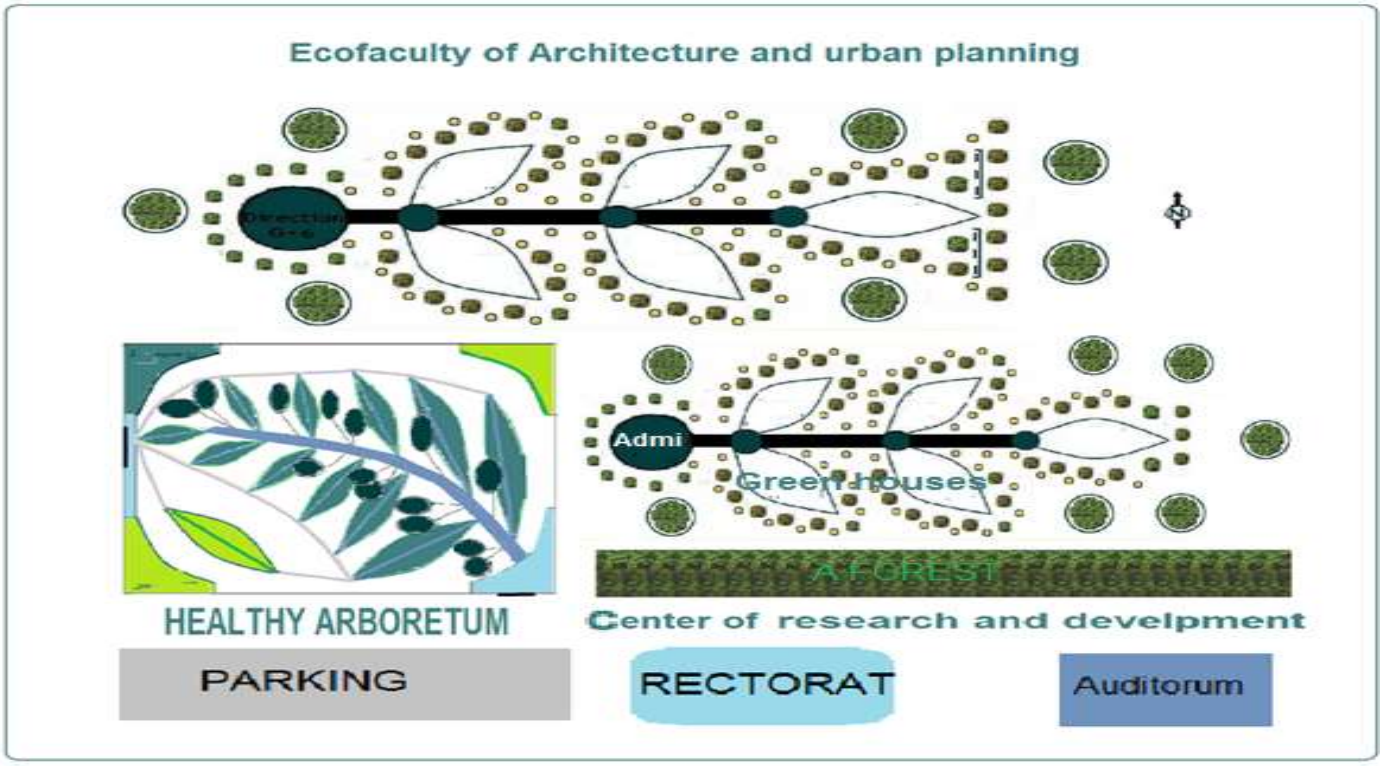



**Fig 17 Model in plan on scientific space of architecture and planning(Source.Author.2024)**

The research laboratory in administrative block allows the landscaper to analyse the practice of the landscape project in its different facets.

The spaces in the greenhouses makes it possible to integrate a landscape dimension into the experimentation in special study spaces forming walks in research of landscaped atmosphere which depends on smell and vison.The covering of greenhouses are done using policom polycarbonates sheets.A floor in the administrative block is equiped with tools of modeling and research on plants and flowers with an encyclopedic databases.

**13.Aestetic form of scientific space inspired from vegetation.**

The form of an olive branches allows the harmonious integration of scientific space in the east suburb landscape of Ouzera Town.

13.a. Presentation of the project idea

Here is the urban source of inspiration for an aestetic view in mass on the faculty of earth and universe sciences and sciences of life and nature.

**Fig 18 : Source of modeling/The branches of olives.**

**13.b. A description of project**

The faculty has eight scientific departments of 500 students whose the administration is in G+1 and the amphis of each departments has 250 places. The total number of students in the faculty is 4000 students.
The administrative block of faculty is in G+7 and has a landscaped view overall the blocks.The whole offers a landscape sight for the façade of North South
North South Motorway.The urban ensemble of the faculty is arranged in an aestetic form with shrubs and flowers and a variety of trees forming the surrounding of faculty in harmonious view.

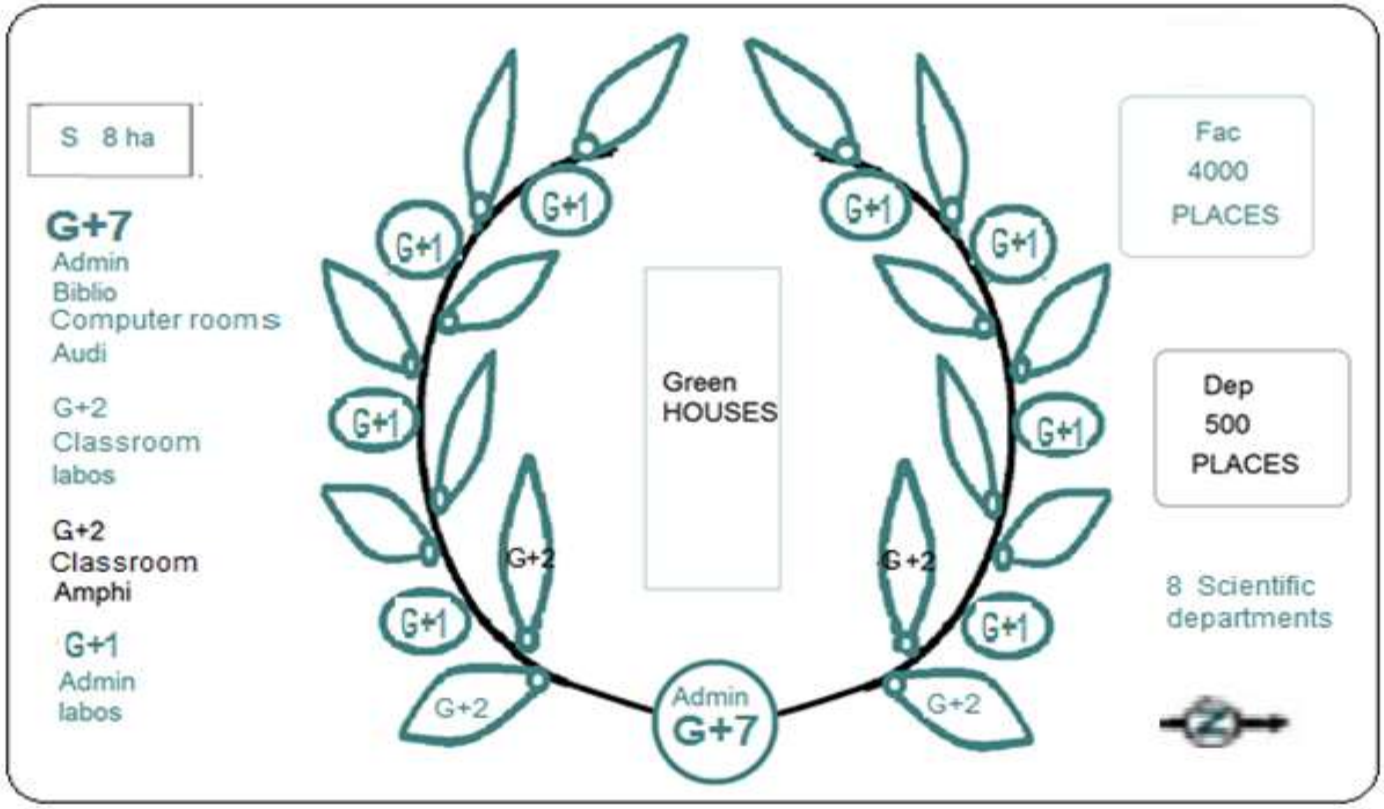



**Fig 19 : Model in plan of an olive branches faculty(Source.Author.2024).**

The departments of faculty are : Engineering of water and environment. Geography and geomatics. Geology and geochemistry. Goephesics and water ressources.Forestry and botanical engineering.Geological engineering and plant geomatics.Agronomy.Ecological engineering.

**14.Functional form of scientific space .**

**14.a. Edea and functional form of project**

The protein structure is a source of modeling and urban design of a faculty of medicine and veterinary sciences which has 2000 pedagogical places distribued over 8 departments whose the pedagogical space is in the form of a barbecue.

The biotope area factor is 0.5 in total surface of faculty.
The faculty has a space for breeding and educational forms whose the functional for mis ensured with educational space.

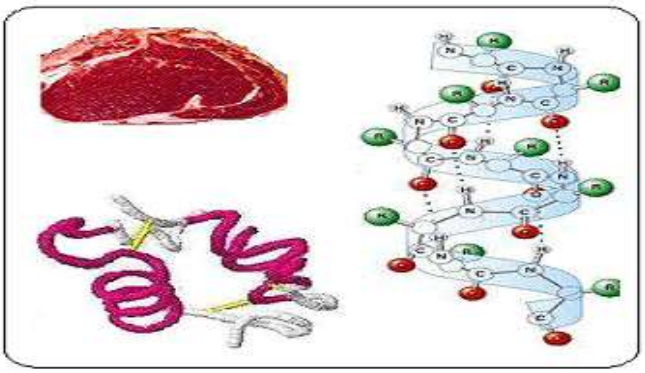


Fig 20 :source of modeling

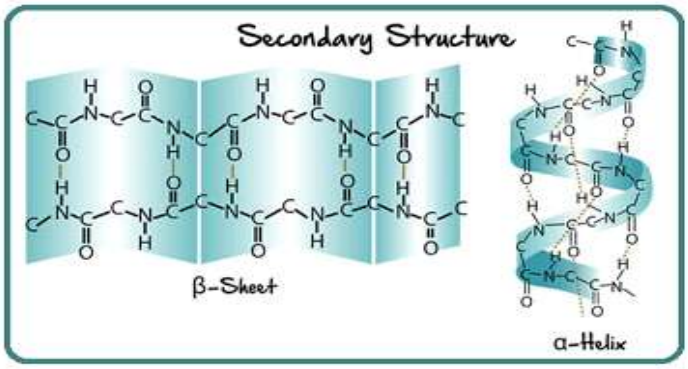



fig 21 :Structure of protein

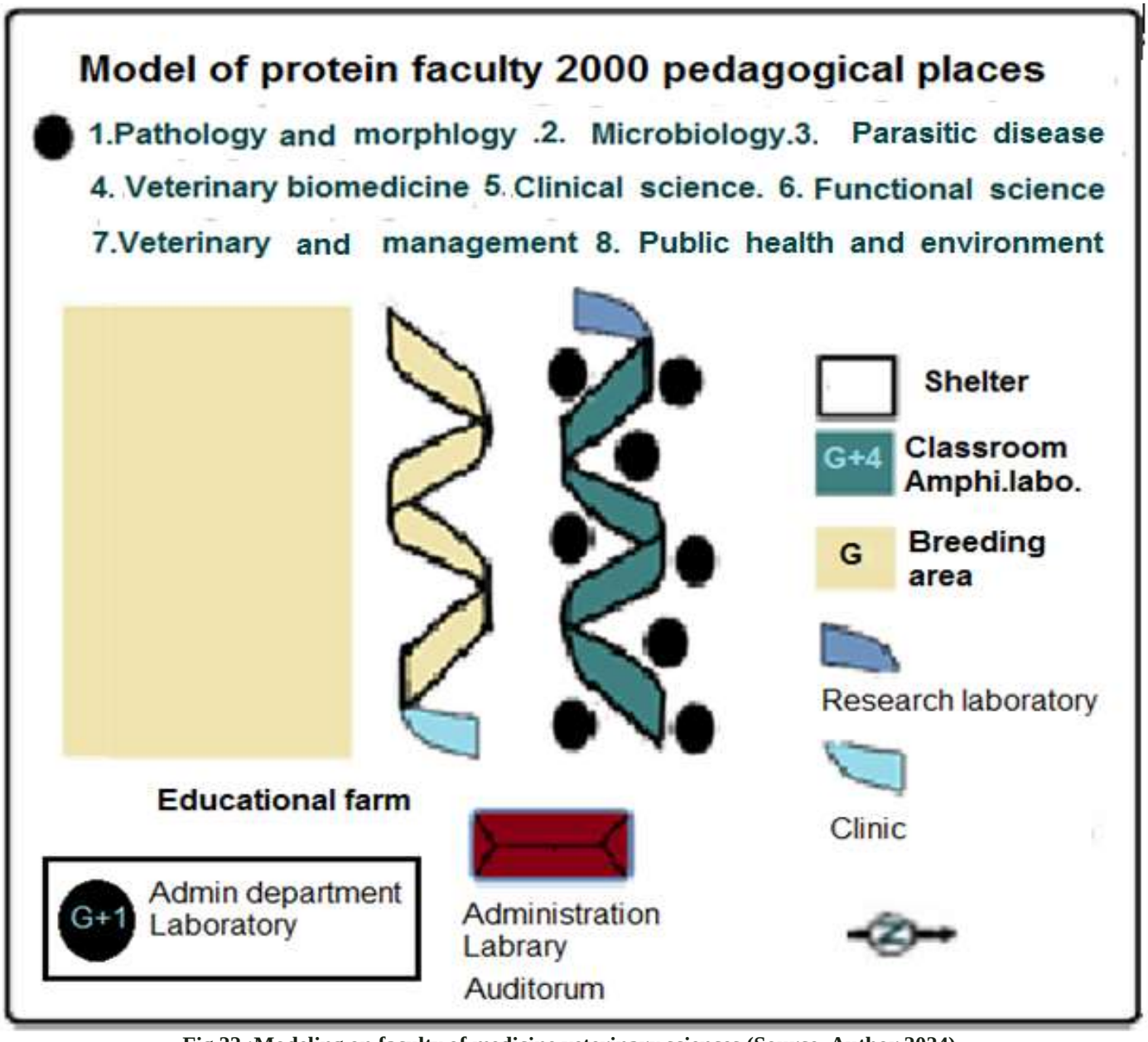



**Fig 22 :Modeling on faculty of medicine veterinary sciences (Source .Author.2024).**

**14.b. Mass presentation of project in the scientific space**

In the next page a mass view on faculty of medicine and veterinary sciences in the scientific space which is located in the eastern suburb of Ouzera Town with a view of motroway and landscaping.

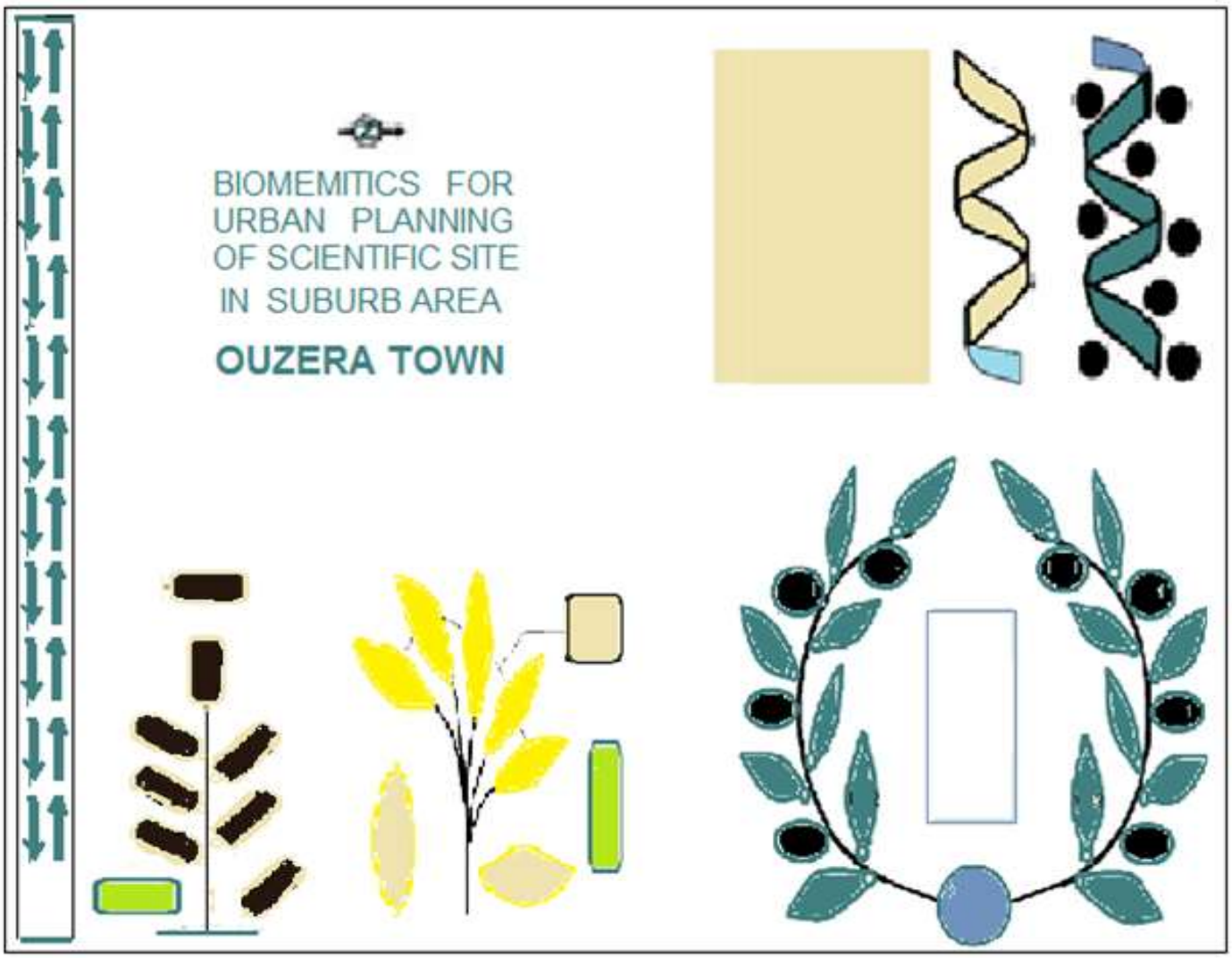



**Fig 23 :Model in plan of scientific space in suburb area(Source.Author 2024)**

## 15.Conclusion

Town planning and architectural design to develop a scientific zone in urban site by establishing a new faculty of medical sciences for scientific development in a healthy area far from the pollution of factories and congestion due to high density of population. The space of the faculty of Architecture and urban planning and the recearch center of landscape architecture and urban ecology also to add a new field of Architecture through the development of research on Landscape Architecture in an ecological and landscaped site.

The scientific zone designated for established in the eastern suburb of Ouzera Town with the university residence adding the academic Wealth to the entire region and nighboring regions thanks to the faculty of earth sciences and sciences of agronomy as well as the faculty of sciences and veterinary medicine with facilitates the development of agricultural sectors on the ground and the preservation of livestock breeding and urban biodivarsity.

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**Source of pictures:Facebook account allowed to everyone.

(Frome the municipality of Ouzera)

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