

Health Science Research Center

Taif University



Index

Topics	Page No.
<u>Chapter One: Prospectus</u>	
• Vision.....	4
• Mission.....	4
• Introduction.....	4
• Organization Chart.....	5
• Engineering Design of Health Science Research Center.....	6
• Biomedical Sciences Research department.....	7
• Animal House department.....	11
<u>Chapter Two: Use of Central Laboratories Guideline</u>	
• The Goal.....	15
• Policy.....	15
• Duties of Central Laboratories Operator.....	16
• Duties of Researcher/Visitor to Central Laboratories.....	16
<u>Chapter Three: Occupational Safety and Health in HSRC</u>	
• Laboratory Safety Program in HSRC Based on OSHA Standard.....	19
• Policies and Procedures for Health and Safety in Chemical Laboratories of HSRC.....	19
• Safety Standards for Animal House.....	19
<u>Chapter Four: Forms</u>	
• Orientation Form.....	21
• Lab Log Sheet Form.....	22
• Periodic Maintenance Form (PM Tasks Instrument).....	23
• Incident Report	24



Chapter One

Prospectus



Vision

That the health science research center become internationally accredited in laboratory research and scientific consultation.

Mission

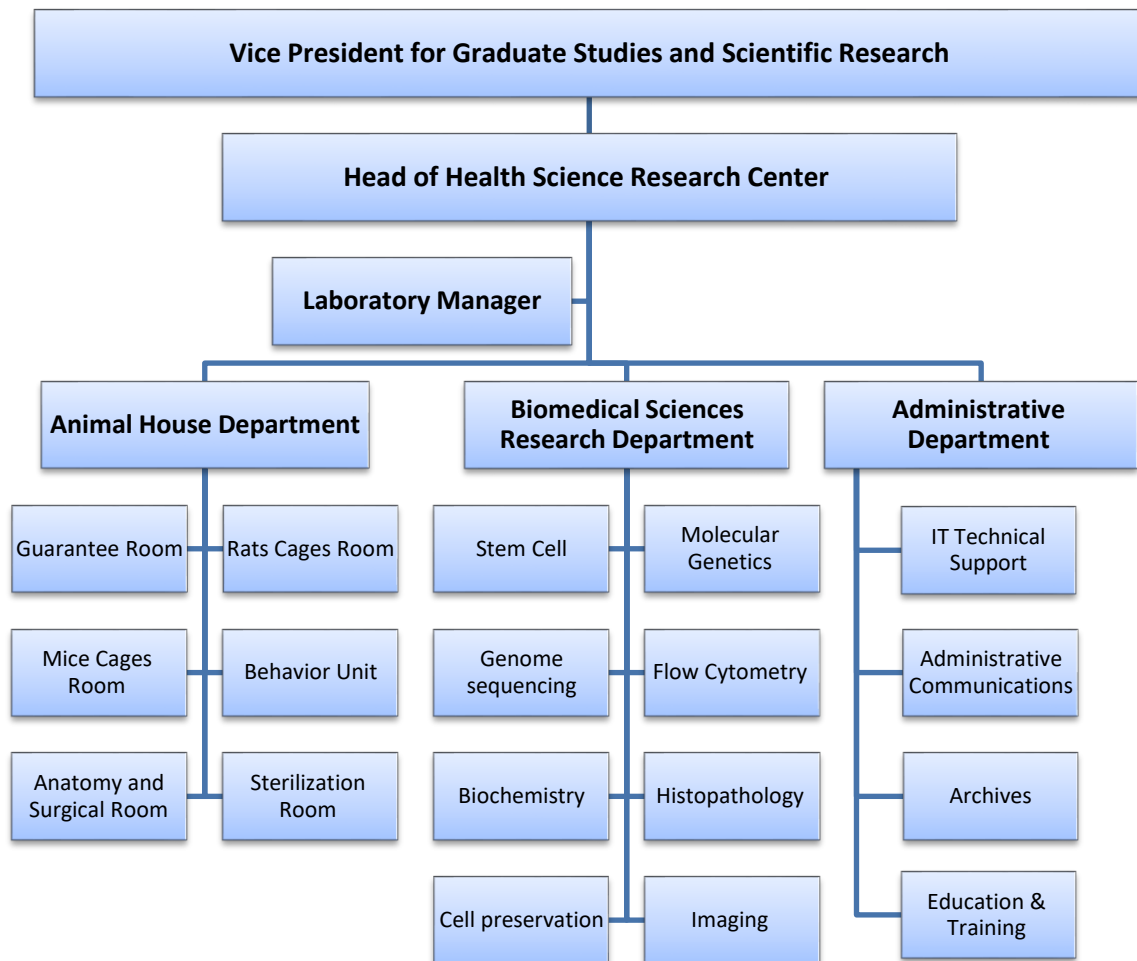
Health science research center seeking to provide an excellent service for researchers through integrated infrastructure based on an environment that complies with international standards in the field of laboratories.

Introduction

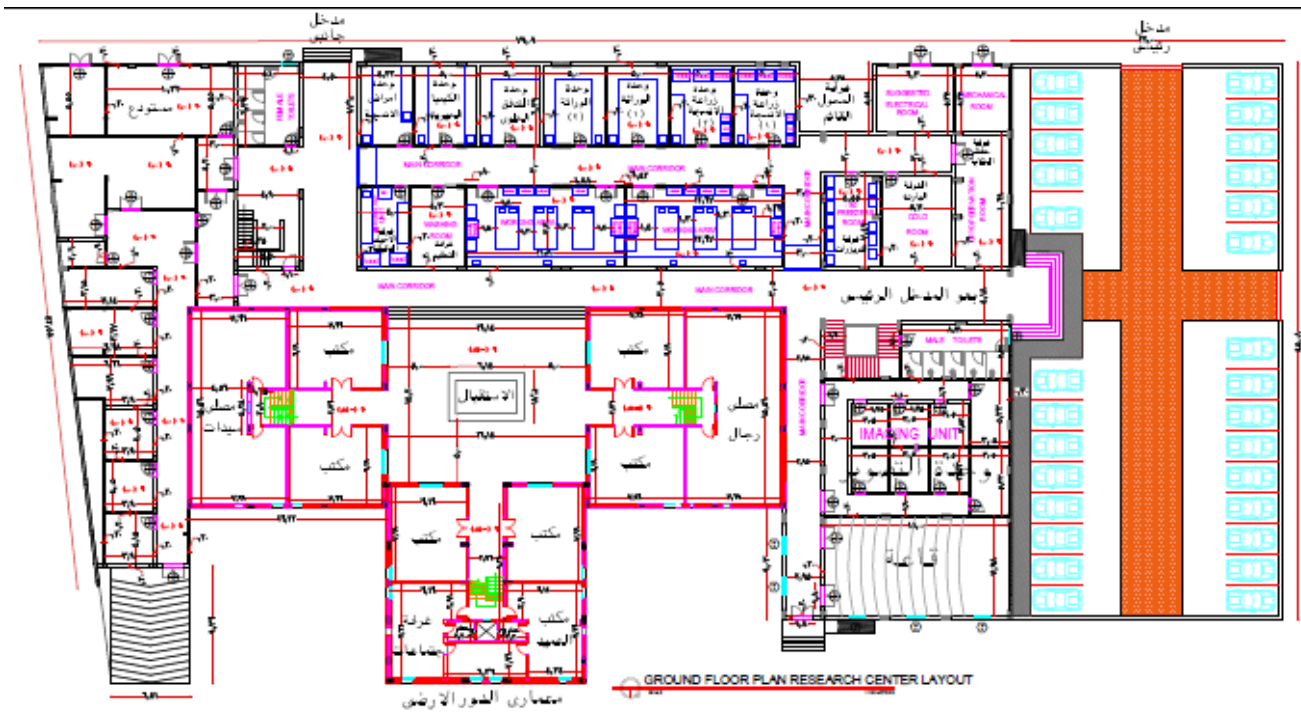
Health science research center is a critical strategic component of research institutions, as over the past two decades researchers in research and development institutions have increasingly relied on complex scientific tools, equipment and services in many fields of science. With the ever-increasing price of scientific instruments and the cost of their operation and maintenance, the view of health science research center and basic facilities has shifted from being useful to an urgent need to keep pace with rapid progress in various research fields. What distinguishes this type of laboratory is that it has complex and often expensive laboratory equipment under one roof, which can be difficult for researchers to provide individually. It also includes qualified scientific and technical cadres with high technical training and specialized ability to operate research devices effectively and efficiently, to analyze and interpret data and outputs of research experiments, and to provide scientific and technical consultations, which enable researchers to conduct research experiments more effectively in terms of cost, efficiency, speed of completion, and optimal use of human and financial resources. In order to achieve the Vision 2030 goal of the importance of health science research center and Taif University pay more attention to supporting advanced research infrastructures as a first step where the research laboratories, which include two research departments, were established to promote a culture of interdisciplinary collaborative scientific research.



Organization Chart



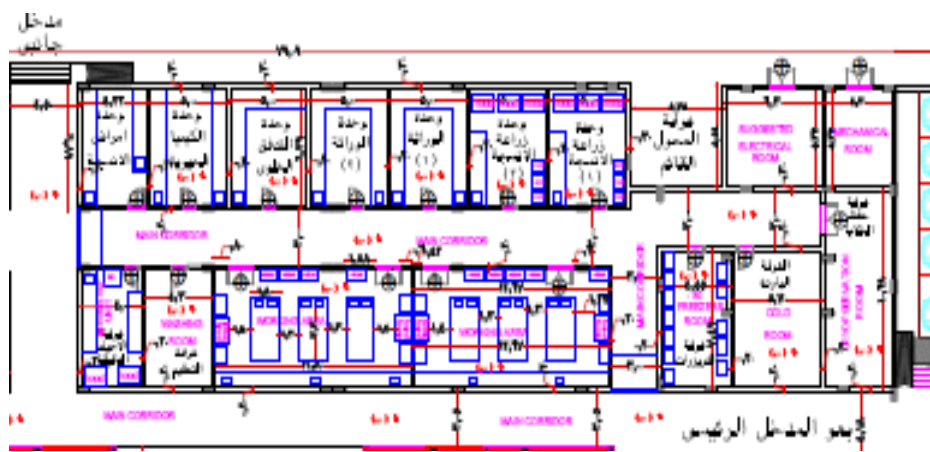
Engineering Design of Central Laboratories



1. Department of Biomedical Sciences Research:



Based on Taif University's understanding of the importance of looking forward to the future and developing a road map towards making full use of Applied Medical Specialties, as well as presenting research developments and creating a common platform between health educational institutions and the labor market, to achieve knowledge exchange and explore experiences related to the future of Applied Medical Specialties academically and professionally, therefore; the Department of Biomedical Sciences Research was established with the aim of conducting scientific and laboratory research in the fields of biomedicine to contribute to the diagnosis and discovery of many diseases and the search for more effective drugs to treat them.



• Stem Cell Unit

- Providing all types of human and animal cells for those working in medical research and basic sciences.
- Establishing a stem cell bank for investment research and treatment purposes.
- Providing research places to conduct research for research teams and specialists.
- Providing training programs for students and researchers.
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Safety Cabinet	A2 Class2	4
2	Centrifuge	Cooling	2
3	water bath		2
4	light Microscope	With Camera	2
5	Co2 Incubator	Connected to Cylinder for incubation	4

• Molecular Genetics Unit

- Providing a genetic detection service for biodiversity.
- Providing gene expression detection services under different conditions.
- Genetic detection of infectious diseases.
- Providing training programs for students and researchers
- Providing research laboratories for specialists.
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Thermal Cycler	PCR	2
2	RT-PCR	BIORAD real time -PCR	2
3	Laminar Flow	for RNA experiment	1
4	Nanodrop		1
5	Electrophoresis		1



• **Genome sequencing unit**

- Genetic Study
- Detection of genetic diseases.
- Identify whole Gene sequence
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Next Seq	TO entire genomes or targeted regions of DNA or RNA	1
2	Mi Seq	To automate the DNA sequencing process	1

• **Flow Cytometry unit**

- It is for quantitative analysis of cells and cell separation using state-of-the-art flow Cytometry equipment
- Measuring relative analysis of cells
- Providing cell sorting technique
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	FACS CANTO	BD FACS CANTO for analysisi	1
2	FACS Aria III	BD FACS Aria III for anaylsis and sorting	1

• **Biochemistry unit**

- Quantitative and qualitative analysis for chemical compounds
- Study the properties of compounds
- Analysis of drugs
- Analysis of water and foods
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	HPLC	with fluorescent detector	1
2	Chemical Cabinet	for storing as per safety regulations	1
3	Safety Cabinet	Fume Hood	1



• Histopathology unit

- Performing tissue embedding
- Tissue fixation procedure
- Embedding of tissues in paraffin and ice freezing
- Performing staining of tissue
- Conducting a microscopic study of pathological tissues
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Tissue Processor (Block)	prepare tissue for embedding	1
2	Cryostat	Cutting tissue at low temperature	2
3	Microtome	Cutting tissue	1
4	Embedding Station	for embedding process	2

• Cell preservation unit

- Cells are stored in liquid Nitrogen
- Establishing a stem cell bank for research, therapeutic and investments purposes.
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Liquid Nitrogen Generator	for liquid Nitrogen production	1
2	Tank	Storing Cells with liquid Nitrogen	2

• Imaging unit

- Providing electronic and optical microscopes services to researchers.
- Establishing a stem cell bank for investment research and treatment purposes.
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Confocal Microscope	Lieka system	1
2	Fluorescence microscope	Lieka & Ziess system	2
3	Phase Contrast Microscope	Light Microscope	1

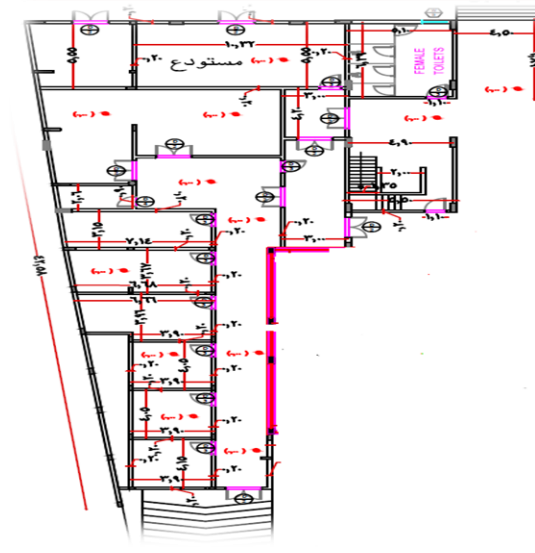


4	Upright Fluorescent Microscope	Automated	1
5	Inverted Microscope	Lieka system	1

2. Animal House Department:



The establishment of the Animal House aims to be considered a rare specialty in the kingdom that provides veterinary services and research consultations to researchers.



- **Guarantee Room**

- Examination of animals to ensure safety from infectious diseases

- **Mice & Rats Cages Rooms**

- Breeding Mice and Rats for researchers and growth caring
- Providing proper environment for breeding
- Applying animal care and ethics standard
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Rat Cages	with separated room	2
2	Mice Cages	with separated room	2
3	Changing Station	to change cages	3

- **Behavior Unit**

- Providing behavioral experiments service
- The study of social behavior
- Monitoring the genetic and physiological influences on behavior
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Anesthesia system	for anesthesia process	1
2	Stereotaxic System	for allows for the precise location of brain sections	2



- **Anatomy and Surgical Room**

- Providing surgical services for research experimental
- Waste Management according to a biological waste standard
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Fume Hood		1
2	Sink	water sink	1
3	Area Station	for practical surgery	1

- **Sterilization Room**

- Sterilization of all equipment
- Cages sterilization and disinfection
- A unit equipped with instruments including:

No	Instrument Name	Description	Quantity
1	Washer Machine	Automated Washer machine for tools	1
2	Autoclave	for autoclaving tools	1
3	Bottle Filler	Automated bottle filler by water	1



Chapter Two

Use of Health Science Laboratory department Guideline



Policy on how to use laboratories and instruments

The Goal:

Provide guidance for lab policies and procedures according to the quality management system of health science research center.

Policy:

Health science research center of Taif University has system to organize using lab facility and instruments that guarantee visitors safety and instruments efficiency.

- Orientation Form must be filled to activate use for lab booking system
- Researcher code will be created for lab use.
- Booking system then for instruments will be available through the link below



- Daily Logsheet form must be filled to enter the central laboratories.
- Commitment to the occupational safety and health system in laboratories, (the third chapter).
- Animal House Standard:
 - Full compliance with the scientific research ethics guidelines of Taif University.
 - The regulations and standards of the Animal House safety program.
- According to Deanship of community services convention, training opportunity will be available.



Duties of the central laboratory operator:

- Introduce the researcher/visitor to the laboratory department facility.
- Follow the guidelines for Occupational Safety and health of the laboratories.
- Provide personal protective equipment for laboratory safety.
- Provide access permits to laboratories and do not allow unauthorized persons to enter work areas.
- -Providing assistances to researcher/visitor.
- Provide accessories and auxiliary devices for the main devices.

Duties of researcher/visitor to central laboratories:

- To comply with the instructions of the health science research center entries and log sheet form.
- Do not enter the lab facility with items not related to lab work.
- Follow the Occupational Safety and health guidelines of the laboratory.
- Using instruments and lab facility for research purposes only.
- Providing materials and reagents for experiments through financial support of research projects.



Chapter Three

Occupational Safety and Health in Health Science Research Center



Occupational Safety and health in central laboratories

Occupational Safety and health is necessary for lab work to prevent and minimized incidents. It provides preventive and backup services to the three components of production: manpower, equipment, and materials used, therefore; please follow:

- Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in lab areas where specimens are handled.
- Food and drink are not stored in refrigerators, freezers, cabinets, or on shelves, countertops, or bench tops where lab materials are stored or in other areas of possible contamination.
- Keep pens and pencils out of your mouth.
- Appropriate Personal Protective Equipment (PPE) must be used continuously in the lab area.
- Never mouth pipette, Mechanical pipetting devices must be used for pipetting all liquids.
- Frequent hand washing is highly an important, which should be practiced after contact with any specimens and laboratory materials.
- Laboratory work surfaces/bench top must be disinfected daily and after a spill of blood or body fluid with a 1:10 dilution of Clorox in water.
- Know where the nearest eyewash station is located and how to operate it.
- You should handle all patient samples as potentially biohazards materials.
- Proper handling of sharps.
- Label all specimen and any preparation materials with isolation stickers.
- All reagents should be kept in the proper storage facilities.
- Know where all fire exits, fire extinguishers and fire alarms are located.
- Know how to properly operate fire alarm and fire safety equipment.
- The use of extension cords is prohibited.
- Never operate electrical equipment with fluid spillage or with wet hands.
- Centrifuges should not be used without the covers completely closed.
- Any type of accident should be brought to the attention of a nearest person of the area.





- lab Safety Program in Health Science Research Center Based on OSHA



- Policies and Procedures for Health and Safety in Chemical Laboratory.



- Animal House Standard



Chapter Four

Forms



نموذج الجولة التعريفية (Orientation Form)

ORIENTATION CHECKLIST FOR NEWLY Researcher/Visitor

Name of Researcher/Visitor	
TU-Staff ID	
Position	
College/Department	
Date	
Signature	

SN	FIELD OF ORIENTATION	DONE	NOT DONE
1	Familiarization tour of all the units and introduction to other staff members		
2	Introduction to Laboratory Safety Program		
3	Introduction to Chemical Safety		
4	Introduction to Waste Management System		
5	First Aid and Emergency arrangement		



نموذج الدخول (Log Sheet)

Lab Log Sheet

No	Research Name	Faculty	T. Unit	T. Instrument	Time		Date	Sign
					In	Out		



PM Tasks Instrument

Instrument Name:.....

Unit:.....

Model:.....

Serial Number:.....

Work Description:.....

.....
.....
.....
.....

Recommendation:.....

.....
.....
.....
.....

Date:.....

Signature:.....



تقرير حادثة (Incident Report)

Health Science Research Center Incident Report

(IR)

Name Person Involved Incident _____ Signature _____

- Employee
 Student
 Researcher
 Visitor

Laboratory Supervisor

Unit/Lab:

Time & Date of Incident:

Location of Incident:

Details of Incident

What action was taken

Investigated by

Print Name:

Signature:

Date:

