كلية العلوم الطبية التطبيقيه بالدوادمى

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Ministry of Higher Education

Shaqra University

COLLEGE OF APPLIED MEDICAL SCIENCES (DAWADMI)

كلية العلوم الطبية التطبيقية

CLINICAL LABORATORY SCIENCE DEPARTMENT

CLINICAL INTERNSHIP PROGRAM

خطه سنه الامتياز - برنامج المختبرات الطبية- الدوادمى

of

CLINICAL LABORATORY SCIENCE PROGRAM

قسم المختبرات الطبية

Noted by

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Dean

Feb - 2017

Date Completed

اللائحة التنظميه والقواعد لسنة الامتياز

تعريف سنة الامتياز

هي اثني عشر شهرا من التدريب الاكلينيكي شامله الاجازات والعطلات الرسميه التى تمنحها الدوله بعد أن ينهى الطالب متطلبات التخرج من الكلية. وهذه الفترة تعتبر جزءاً مهما مُكَمِلاً لدراسة العلوم الطبية ولا يعتبر الطالب مؤهلا لممارسة مهنة أخصائي مختبر إلا بعد إتمام هذه الفترة بنجاح.

شروط الالتحاق بالسنة التدريبية (الامتياز)

الانتهاء من جميع المتطلبات الجامعية بنجاح حتى السنة الرابعة بقسم المختبرات الطبية بكلية العلوم الطبية التطبيقية بجامعة شقرا .

مدة السنة التدريبية (الامتياز)

هي اثني عشر شهرا من التدريب الاكلينيكي متضمنه الاجازات الرسميه التى تمنحها الدوله ويجب ان تؤخذ موافقه خطيه من الكلية فى حاله التدريب أثناء هذة الاجازات الرسميه ولا تخصم من مدة التدريب.

بداية السنة التدريبية (الامتياز)

يتم تحديد بداية سنة الامتياز من قبل المشرف على برنامج الأمتياز ولجنة الشؤون الاكاديميه بالكلية في نهاية الفصل الدراسي الثاني في السنة الرابعة للطالب بعد أستيفاء الطالب شروط الالتحاق بسنة الامتياز.

جهات التدريب لسنة الامتياز

هي احد المستشفيات او المراكز الطبية و البحثية الداخلية او الخارجية المعتمدة من الكلية لتدريب طلاب الامتياز.

كلية العلوم الطبية التطبيقيه بالدوادمى

شروط اجتياز السنة التدريبية (الامتياز)

- ✓ يشترط لأجتياز سنة الأمتياز الحصول على درجة نجاح من مشرف المختبر لسنة الامتياز في كل تخصص. و إعتمادها من لجنه الشؤون الأكاديمية والتدريب بالكلية وعميد الكلية.
- ✓ في حالة عدم أجتياز طالب الامتياز التقييم من مشرف المختبر كتقييم في أي تخصص في سنة الإمتياز أو أذا تجاوزت نسبة الغياب بأكثر من المسموح في أي تخصص يتم إعادة ذلك التخصص وذلك بقرار من لجنه الشؤون الأكاديمية والتدريب و اعتمادها من المشرف على البرنامج وعميد الكلية.
- ✓ في حالة الغياب بعذر مقبول يقوم الطالب بإعادة المدة التي تم الغياب فيها و ذلك في نهاية السنة التدريبية.

الأقسام التي يتم التدريب فيها و المدة المخصصة لكل قسم منها

يتدرب طالب الامتياز خلال فترة سنة الامتياز فى التخصصات التالية:

- ✓ **الأحياء الدقيقة الطبية (Medical Microbiology)**
- ✓ **أمراض الدم (Hematology)**
- ✓ **الكيمياء الإكلينيكية (Clinical Chemistry)**
- ✓ **المناعة و الامصال (immunology & Serology)**
- ✓ **بنك الدم (Blood Bank)**
- ✓ **الهستيولوجي (Histopathology & Cytology)**
- ✓ **الطفيليات (Parasitology)**
- ✓ **الوراثة و الأحياء الجزيئية (Genetics & Molecular Biology)**
- ✓ **الوراثه الخلويه Cytogenetic**
- ✓ **الخلايا الجزعيه Stem Cell**
- ✓ **أي تخصص يعتمد من قبل لجنه الشؤون الاكاديميه والتدريب بالكلية.**

نظام الإجازات و الغياب خلال السنة التدريبية (الأمتياز)

- ✓ يتمتع طالب الامتياز بإجازة لمدة أربعة عشر يوماً فقط على فترتين خلال سنة الامتياز ولا يحق له جمعها خلال فترة التدريب دفعة واحدة إلا بموافقة لجنه الشؤون الأكاديمية والتدريب و اعتمادها من الكلية على ان يعاد اضافه عدد ايام الاجازة الى فتره التدريب فى نهايه مدة التدريب بحيث يكون مدة التدريب الفعليه كامله وغير منقوصه ويتاخر تخرج الطالب لحين تعويض ما فاته من تدريب خلال مدة الاجازه.
- ✓ يحق لطالب الامتياز التمتع بالإجازات الرسمية لموظفي الدولة في المملكة العربية السعودية.
- ✓ يحق لطالب الامتياز التقدم لجهة التدريب بطلب إجازة اضطرارية كحد أقصى أسبوع على أن يتم اعتمادها من لجنه الشؤون الأكلينيكية والتدريب و المشرف على البرنامج وعميد الكلية قبل التمتع بالاجازة على ان يعاد اضافه عدد ايام الاجازة الى فتره التدريب فى نهايه مدة التدريب بحيث يكون مدة التدريب الفعليه كامله وغير منقوصه ويتاخر تخرج الطالب لحين تعويض ما فاته من تدريب خلال مدة الاجازه.

شروط تحويل السنة التدريبية (الأمتياز)

- ✓ لا يحق لأي طالب أمتياز تغيير مكان وفترة التدريب إلا بعد موافقة لجنه الشؤون الأكلينيكية والتدريب و اعتمادها من عميد الكلية بما يتناسب مع الخطة التشغيلية للقسم مع عدم الإخلال في عدد طلاب الامتياز لكل قسم، ويتم النظر في طلبات التغيير للحالات الخاصة بشرط التقدم بطلب التغيير للجنة بمدة لا تقل عن ستة أسابيع من بداية التدريب.
- ✓ في حالة تغيير مكان وفترة التدريب دون الرجوع للكلية يصدر قرار من عميد الكلية بناء على توصية اللجنة بإعادة فترة التدريب.

شروط تأجيل السنة التدريبية (الأمتياز)

المتقدمين بعذر مقبول وبعد موافقة واعتماد المشرف على التتدريب (سنه الامتياز) يسمح بتأجيل سنة الامتياز للمتقدم بحد أقصى ثلاثة أشهر. وما زاد عن ثلاثه أشهر يعرض على مجلس القسم لابداء الرأى على ان يبدأ التدريب من تاريخ التحاقه بالتتدريب لمدة عام ميلادى كامل أو بعد خصم فترة الأنقطاع للذين بدوا التتدريب ثم تقدموا بعذر مقبول على أن يبدأ التدريب في التخصص ذاته قبل فترة الأنقطاع.

النتائج المتوقعة في نهاية سنة الامتياز

- ✓ تطوير مهارات الطالب في مجال المختبرات الطبية.
- ✓ تقييم نتائج فحوصات المختبر الضرورية لتشخيص وعلاج الأمراض.
- ✓ حث الطلاب على التمتع بأخلاق مهنية عالية أثناء القيام بمهام العمل مع المرضى وكذلك مع أعضاء الفريق الطبي.
- ✓ تطوير العمل الجماعي واحترام جميع التخصصات الصحية المساهمة.
- ✓ تطوير القدرة على التواصل والتطوير المهني عن طريق التعليم الطبي المستمر لموظفي المختبر والمشاركة في العمل ضمن الكوادر الطبية.

مسئوليات طالب الامتياز

- ✓ يلتزم الطالب بالوصف الوظيفي لطلاب الامتياز.
- ✓ يلتزم طالب الامتياز بالحضور والانصراف في مواعيد العمل الرسمية أو حسب مواعيد كل قسم بما يتناسب مع الخطة التشغيلية لكل قسم في جهة التدريب.
- ✓ يلتزم طالب الامتياز بتغطية المناوبات المطلوبة منه بالقسم الذي يعمل به في جهة التدريب.
- ✓ يجب على طالب الامتياز إتباع التعليمات والأنظمة الخاصة بالمستشفى الذي يعمل به.

- ✓ **على طالب الامتياز التقييد بأنظمة المستشفيات وفي حاله إيقافه عن التدريب من قبل المستشفى يتم حسب أنظمه الكلية إيقاف التدريب لسنة الامتياز والبحث عن قبول أخر من قبل الطالب ولا تحسب فترة الإيقاف ضمن فترة سنة الامتياز.**
- ✓ **إذا تغيب طالب الامتياز أو انقطع ثلاثة أيام فأكثر عن الحضور خلال التدريب بالمستشفى فيجب إبلاغ لجنه الشؤون** الأكاديمية **والتدريب لاتخاذ اللازم حيال ذلك.**
- ✓ **لعميد الكلية بناء على توصية المشرف على سنة الامتياز ولجنه الشؤون الإكلينيكية والتدريب بقسم تقنية المختبرات إلغاء التدريب لطالب الامتياز في حالة انقطاعه عن العمل دون سبب مقنع أو الإخلال باللوائح والأنظمة بالجامعة.**
- ✓ **تطبق لائحة تأديب الطلاب بجامعة شقراء في حق طالب الامتياز الذي يخالف الأنظمة والقوانين.**

نظام تقييم طالب الامتياز

يخضع طالب الامتياز للتقيم من قبل جهة التدريب طبقا لنموذج التقيم المعتمد من قبل الكلية و لا يعتد باي نماذج اخرى للتقيم و يجب ان يعتمد نموذج التقيم من قبل جهة التدريب و من ثم أعتماده من الكلية و تقع مسؤلية أعتماد نموذج التقيم من جهة تدريب على الطالب.

الأوراق التي تقدم للالتحاق بسنة الامتياز

- ✓ **صورة من السجل الأكاديمي.**
- ✓ **صورة من الهوية سارية المفعول بحد أدنى 12 أشهر.**
- ✓ **صورتين شمسيتين**
- ✓ **تعبئة النماذج المطلوبة الخاصة بالكلية والحصول على موافقة لجنة الشؤون** الأكاديمية **و التدريب.**

كلية العلوم الطبية التطبيقيه بالدوادمى

Shaqra University
College of Applied Medical Sciences
DEPARMENT OF CLINICAL LABORATORY SCIENCE

CLINICAL INTERNSHIP PROGRAM

INTRODUCTION

Dear Student:

Congratulations to be at the final step on your study. The internship year is the year where you can gain more than 80% of your practical knowledge during studying. The main aim of this year is to apply and practice what you have learned during 4 years of theoretical & laboratory classes, performing real tests for real patients and to investigate and diagnose real diseases.

Being a medical laboratory technologist or clinical laboratory scientist is a complex and challenging job. According to the ASCP, the Medical Technologist has the ability to "work in all areas of the clinical laboratory including blood banking, chemistry, hematology, immunology and microbiology. They perform a full range of laboratory tests – from simple premarital blood tests, to more complex tests to uncover diseases such as HIV/AIDS, diabetes, and cancer. They are also responsible for confirming the accuracy of test results, and reporting laboratory findings to pathologists and other physicians. Also known as clinical laboratory scientists (CLS), medical technologists operate complex electronic equipment, computers and precision instruments.

Finally, as faculty members we are proud of you, and wish you all the best. Always remember that we are here to help you. So, do not hesitate to contact us whenever you need.

Good luck!

The Head and Teaching Staff

CLINICAL LABORATORY SCIENCE DEPARTMENT

A. Personal safety:

Respiratory and body protection:

- Use fume hoods whenever possible.
- Splash proof safety goggles should be worn at all times in the laboratory.
- Laboratory coat/apron should be worn in the laboratory.
- Appropriate gloves should be worn as needed.
- Appropriate closed-toed shoes should be worn in the laboratory.

Personal Hygiene:

- Wash hands before leaving laboratory.
- Launder clothing worn in laboratory separately from other clothing.
- Never mouth pipette anything in the lab.
- Never eat, drink or apply cosmetics in a laboratory or areas where chemicals/hazardous agents are stored. (Smoking is prohibited in all areas of hospital buildings, including laboratories).
- Never store food in a refrigerator where hazardous materials are stored.
- Never eat or drink from laboratory glassware.
- Avoid wearing contact lenses in the laboratory.
- Avoid situating long hair, loose sleeves/cuffs, rings, bracelets, etc. in close proximity to open flames or operating machinery.
- Keep exposed skin covered. Shorts, sleeveless or short sleeve shirts, skirts or open-toed shoes should not be worn in the laboratory.

B. Personal Protective Equipment (PPE):

Eye Protection:

- Eye wear should be as comfortable as possible, fit snugly over the eyes and around the face, and not interfere with the movement of the wearer.
- Appropriate eye protection should be worn when using:

a) Caustics, corrosives, or irritants.

b) Glassware under vacuum or pressure (reduced or elevated).

c) Cryogenic materials.

d) Flammable materials.

e) Radioactive materials.

f) Lasers (special lens protection required).

g) UV light (special lens protection required) .

h) Biohazards.

- Eye safety equipment should be capable of being cleaned and disinfected.

■ Eye protection should always be kept in good condition.

Lab coat:

■ The lab coat is designed to protect the clothing and skin from chemicals that may be spilled or splashed. It should always be properly fitted to the wearer and is best if it is knee length. There are several different types of lab coats for different types of protection.

■ Cotton protects against flying objects, sharp or rough edges and is usually treated with a fire retardant.

■ Wool protects against splashes of molten materials, small quantities of acid, and small flames.

Aprons:

■ An apron provides an alternative to the lab coat. It is usually made of plastic or rubber to protect the wearer against corrosive or irritating chemicals. An apron should be worn over garments that cover the arms and body, such as a lab coat.

Gloves:

■ Should be worn when touching blood or other potentially infectious fluids.

■ Gloves need not be worn when feeding individuals. When wiping saliva from the skin, use protective barriers such as bibs or towels.

■ General infection control practices already in existence, including the use of gloves for digital examination of mucous membranes and endotracheal suctioning, should continue to be followed.

■ Wear gloves when performing phlebotomy.

■ Change gloves between contact with each person and dispose of after one use.

■ Dispose of gloves out of reach of persons you care for.

■ Wash hands well after removal of gloves.

Hand wash/clean:

■ Wash/clean hands that are visibly dirty or contaminated with blood or body fluids with either a non-antimicrobial or antimicrobial soap and water.

■ Use an alcohol-based hand rub for routinely cleaning hands in all other clinical situations.

■ Wash/clean hands before having direct contact with persons you care for.

■ Wash/clean hands before putting on gloves if you will be performing an invasive procedure.

■ Wash/clean hands after having contact with the person' intact skin, non-intact skin, body fluids, excretions, secretions, mucous membranes or wound dressings that you are caring for.

■ Wash/clean hands during care for a person if you move from a contaminated body site to a clean body site.

■ Wash/clean hands after contact with contaminated objects or medical equipment in the immediate vicinity of the person you are caring for.
■ Wash/clean hands after removing gloves.
■ Wash hands with soap and water (either antimicrobial or non-antimicrobial) before eating and after using the restroom.
■ Wash hands with either type of soap and water if exposure to *Bacillus anthracis* is suspected or proven. The physical action of washing and rinsing hands under these circumstances is recommended because alcohols and other antiseptic agents have poor activity against pores.

C. Infection Control Precautions:

Universal Precautions:

Key points

Standard precautions are standard operating procedures that apply to the care and treatment of all patients, regardless of their perceived infectious risk. These precautions include aseptic technique, hand washing, use of personal protective equipment, appropriate reprocessing of instruments and equipment and implementation of environmental controls. Standard precautions should incorporate safe systems for handling blood (including dried blood), other body fluids, secretions and excretions (excluding sweat), non-intact skin and mucous membranes.

Successful infection control involves five elements:

a) Applying basic infection control strategies.
b) Adopting quality management practices.
c) Developing effective work practices that prevent the transmission of infectious agents.
d) Managing specific infectious agents.
e) Identifying infection control strategies in specialized health care settings (such as operating rooms, dentistry rooms, residential aged care facilities).

Body fluids to which Universal Precautions apply:

a) Blood (single most important source).
b) Semen and vaginal secretions (implicated in the sexual transmission of HIV and HBV).
c) Cerebrospinal fluid (CSF).
d) Pleural fluid.
e) Synovial fluid.
f) Peritoneal fluid.
g) Pericardial fluid.
h) Amniotic fluid.

Body fluids to which Universal Precautions do not apply:

a) Feces

b) Nasal secretions
c) Sputum
d) Saliva
e) Sweat
f) Tears
g) Urine
h) Vomitus unless they contain visible blood.

Standard Precautions:

Standard precautions are infection control recommendations for preventing the transmission of infections issued by the Centers for Disease Control and Prevention (CDC). They apply to blood, all body fluids, secretions, excretions (except sweat), non-intact skin and mucous membranes.

Transmission-based Precautions:

The CDC also recommends transmission based precautions such as airborne, contact or droplet for use with people documented or suspected to be infected with pathogens for which additional precautions are needed mucous membranes.

Student

≠	Lab. Dept.	Duration	Comments
1	Hospital & lab. orientation	One week	Introduce the intern to lab. staff, complete all paper work & get familiar with safety and infection precautions.
2	Sample receiving & processing area	2 weeks	
3	Microbiology & Parasitology	10 weeks	
4	Clinical biochemistry	10 weeks	
5	Immunology / Serology	7 weeks	
6	Hematology	7 weeks	
7	Blood Bank	6 weeks	
8	Histopathology	6 weeks	
9	Lab. Management & quality control	4 weeks	
10	Total	**52 WEEKS**	

Important Notes:

The schedule is subject to change by laboratory director according to students benefit. Please write down any changes in the schedule in the "training manual".

Students absent policy: if the total absent of the student in each section exceeded 10 %; student should have "a warning letter" attached to his "training manual", and if the total absent exceeded 20 %; please notify the faculty coordinator and student should recompense the days he missed.

As a laboratory director/laboratory supervisor, please feel free to recommend any further lab. sections to our students (e.g. Cytogenetics, Molecular Microbiology/Biology, Electron Microscopy Unit…).

Hospital & Lab. Orientation (One Week)

Background:

The "orientation week" is the time when student get in touch with new strict rules, meeting new people and starting his real work life.

Student Learning Objectives:

Upon successful completion of this section/department, the student:

- Should understand the general hospital and laboratory policies.
- Being familiar with hospital and laboratory working duties.
- Finish all of the paper work and get the ID card.
- Meet his supervisor and being introduced to the laboratory staff.
- Should get his own rotation schedule.
- Should be able to locate all laboratory sections/departments.
- Should have screening tests for vaccination.

About hospital & laboratory orientation:

It is highly recommended that the students move to "Sample receiving & processing area" after this week.

Hospital & Lab. Orientation Attendance Sheet

Week 1	**IN**	**OUT**	**Comments**
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Sample Receiving & Processing Area (Two Weeks)

Background:

This is the place where all laboratory samples come to. The samples are processed here according to the laboratory policy and then send toeach appropriate department**.**

Student Learning Objectives:

Upon successful completion of this section/department, the student will be able to:

- Understand the criteria which the samples are processed upon.
- Define the use of each blood container.
- Understand the sample rejection criteria.
- Withdraw venous blood.
- Have better communication skills with patients.
- Understand the important pre-test procedures for critical patients and tests.

About sample receiving & processing area:

As a student, it is recommended to understand the venous blood withdraw especially with children. Also to define the special tests which need more information from the patient, e.g.: Prolactin. Some other samples (like Ammonia) need to be in ice while transported to the lab. Finally, be aware of hemolysed blood samples, blood samples collected in wrong blood container, urine samples for culture collected in non-sterilized containers…

Sample Receiving & Processing area

Attendance sheet

Week 1	**IN**	**OUT**	**Comments**
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			
Week 2	**IN**	**OUT**	**Comments**
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Microbiology & Parasitology Section (Ten Weeks)

Background:

Microbiology section/department is one of the most important sections in the laboratory medicine department. Most infectious diseases are mainly diagnosed at this section. Microbiology section accepts different types of samples, for example: blood samples, swabs, body fluids. Parasitology in many hospitals is a part of microbiology department which cares mainly about the identification of parasites in stool samples.

Student Learning Objectives:

Upon successful completion of this section/department, the student will be able to:

- Give an accurate definition for microbiology department.
- Understand how different samples can be received and processed in microbiology.
- Differentiate between pathogenic and non-pathogenic organisms isolated from different samples.
- Understand the antimicrobial sensitivity tests for each group of organisms isolated from different samples.
- Understand how to write and read a complete microbiology report.
- Understand the internal microbiology quality control system.
- Understand the internal microbiology infection control policy.
- Understand how TB can be diagnosed within microbiology department and how to make the sensitivity test.
- Differentiate between the important microbiology culture
- Understand the microbiology sample rejection criteria.

About Microbiology & Parasitology Section:

You can really enjoy microbiology because it is one of the laboratories that you do most of the tests anually. As a medical technologist, it is recommended to spend a time at Tuberculosis section.

Student should practice skills like:

1. Inoculating samples.
2. Reading cultures.
3. Dealing with CSF and other sterile body fluids.
4. Dealing with blood cultures.
5. Examining stool samples for parasites.
6. If urine and stool analysis are separated from Microbiology department, students are advised to spend 2 weeks at stool and urine analysis section.
7. Examining semen analysis.

كلية العلوم الطبية التطبيقيه بالدوادمى

Microbiology & Parasitology Section Attendance sheet

Week 1	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 2	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 3	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 4	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 5	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 6	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 7	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 8	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 9	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 10	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Clinical Biochemistry Section (Ten Weeks)

Background:

It is a very important section at the hospital, Clinical biochemistry section handling more than 70% of all laboratory tests. Blood chemistry testing identifies many chemical blood constituents. It is often necessary to measure several blood chemicals to establish a pattern of abnormalities.

Student Learning Objectives:

Upon successful completion of this section/department, the student will be able to:

- Give an accurate definition of clinical biochemistry section.
- Understand what kind of specimens can be received &processed in clinical biochemistry section.
- Understand the principle behind each automated machine.
- Understand how and why machines are calibrated.
- Understand the purpose of running controls.
- Know more about special tests in clinical biochemistry.
- Understand the sample rejection criteria.
- Know the critical and emergency values for each test.
- Know about the clinical biochemistry quality control.
- Know about the clinical biochemistry infection control manual.
- Understand the clinical biochemistry procedures manual.
- Understand the importance of POCT units (point of care testing) in ICU.
- Understand the limitations of the important tests, and how that can affect results.
- Know the procedure and the interpretation of different types of electrophoresis tests (e.g. Protein Electrophoresis)
- Understand the biochemistry lab. sample rejection criteria.

About Clinical Biochemistry Section:

Examples of what student should know about clinical biochemistry:

Common screening profiles:

1. **Cardiac Markers:** Cardiac troponin, CK, MB, homocystein.
2. **Electrolyte panel:** Na, K, CL, Co2, pH.
3. **Kidney function**: BUN, phosphorus, LDH, creatinine clearance, total protein, A/G ratio, albumin, calcium, glucose, Co2.
4. **Lipids (coronary risk)**: Cholesterol, triglycerides, HDL, lipoprotein electrophoresis, (LDL, VLDL, HDL).
5. **Liver function:** Total bilirubin, alkaline phosphatase, GGT, total protein, A/G ratio, albumin, AST, LDH, viral hepatitis panel, PT.
6. **Thyroid function**: free T3, total T3, free T4, total T4, TSH.
7. **Basic metabolic screen**: Chloride, sodium, potassium, carbon dioxide, glucose.
8. **Syndrome X (metabolic syndrome)**: Blood lipid, glucose, Cholesterol (C).

Example of routine automated tests performed commonly in clinical biochemistry department:

ALT	AST	Alkaline phosphatase	Bilirubin, total	Bilirubin, direct
Protein, total	Albumin	GGT	Calcium	Magnesium
Glucose	Phosphorus, inorganic	TIBC	Potassium	Sodium
Cholesterol	Triglycerides	HDL	LDL	Iron
Urea nitrogen	Uric acid	Creatinine	Amylase	CO2

كلية العلوم الطبية التطبيقيه بالدوادمى

Clinical biochemistry Section Attendance sheet

Week 1	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

Week 2	IN	OUT	Comments
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Week 3	IN	OUT	Comments
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Week 4	IN	OUT	Comments
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Week 5	IN	OUT	Comments
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Week 6	IN	OUT	Comments
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Week 7	IN	OUT	Comments
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Week 8	IN	OUT	Comments
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Week 9	IN	OUT	Comments
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Week 10	IN	OUT	Comments
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Immunology/Serology Section (Five Weeks)

Background:

Immunodiagnostic or serodiagnostic testing studies antigen-antibody reactions for diagnosis of infectious diseases, autoimmune disorders, immune allergies and neoplastic disease. Blood serum is tested for antibodies against particular antigens, hence the term blood serology testing. Antigens are substances that stimulate and subsequently react with the products of an immune response. They may be enzymes, toxins, microorganisms (e.g. bacterial, viral, parasitic, fungal), tumors or autoimmune factors. Antibodies are proteins produced by the body's immune system in response to an antigen or antigens. The antigen-antibody response is the body's natural defense against invading organisms.

Student Learning Objectives:

Upon successful completion of this section/department, the student will be able to:

- Give an accurate definition of Immunology/Serology section.
- Understand the rejection criteria for Immunology/Serology samples. - Complete understand about the principles of how automated machines are working.
- Complete understand about the principles of all manual tests (e.g.: Agglutination tests).
- The purpose of using controls with each run. - Know about the special tests in Immunology/Serology section. - Understand the internal quality control system. - Understand the Immunology/Serology procedure manual.
- Understand the using of the Fluorescent Microscope for diagnostic purposes.
- Complete understand how the Immunology/Serology samples are received and processed.
- Know the limitations for each important test and how to avoid the test limitations.
- Understand how most serologic tests are confirmed by different methods.
- Understand the post-test considerations for the important Serological tests.

About Immunology / Serology Section:

Examples of what student should know about Immunology/Serology:

Some tests that determine antigen-antibody reactions:

1. Agglutination: Hemagglutination, Immune hemagglutination.
2. Precipitation: Immunodiffusion, Counterimmunoelectrophoresis.
3. Complement fixation. - Immunofluorescence: Indirect fluorescence antibody.
4. Enzyme immune assay.
5. Enzyme-linked immunosorbent assay (ELISA).
6. Immunoblot: Western blot.
7. Polymerase chain reaction (PCR).

Example of bacterial and viral tests:

1. Syphilis Detection Tests: RPR, VDRL, FTA-ABS.
2. Lyme Disease Tests: by ELISA. - Chlamydia IgG test.
3. ASO.
4. Helicobacter Pylori serum IgG antibody.
5. EBV antibody tests.
6. HBV, HAV, HCV tests.
7. HIV 1/2 antibodies tests.

Imunology / Serology Section Attendance sheet

Week 1	IN	OUT	Comments
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Week 2	IN	OUT	Comments
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Week 3	IN	OUT	Comments
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Week 4	IN	OUT	Comments
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Week 5	IN	OUT	Comments
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Hematology Section (Five Weeks)

Background:

Tests received and processed in hematology section are basic screening tests that address disorders of hemoglobin (Hb) and cell production (hematopoiesis), synthesis and function. Blood and bone marrow examinations constitute the major means of determining certain blood disorders (anemias, leukemia and porphyrias disorders, abnormal bleeding and clotting), inflammation, infection and inherited disorders of RBCs, WBCs and platelets.

Student Learning Objectives:

Upon successful completion of this section/department, the student will be able to:

- Give an accurate definition of Hematology section.
- Understand how samples are received and processed.
- Complete understand about the criteria of hematology sample rejection.
- Understand the principle of all automated hematology machines. - Know about the special tests in Hematology section.
- Understand the hematology laboratory quality control system.
- Understand the hematology procedure manual.
- Realize the limitations of the important hematology tests.
- Understand the hemoglobin electrophoresis procedures and interpretation of the results.
- Differentiate between the normal and abnormal WBC, RBC and platelets under microscope.
- Discern between most leukemia stains. Understand the importance of coagulation tests.
- Know the reference ranges for important hematology tests

About Hematology Section:

Examples of what student should know about Hematology Section:

1. **WBCs tests:** WBC count, Differential WBCs. - Stains for leukemia: SBB, PAS, TDT, LAP.
2. **RBCs tests:** RBC count, Hct (PCV), HB, MCV, MCHC, MCH, RDW.
3. **ESR test.**
4. **FEP (Free Erythrocyte Protoporphyrin**).
5. **G6PD.** It is recommended for student to stay more time at the differential bench.

كلية العلوم الطبية التطبيقيه بالدوادمى

Hematology Section Attendance sheet

Week 1	IN	OUT	Comments
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Week 2	IN	OUT	Comments
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Week 3	IN	OUT	Comments
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Week 4	IN	OUT	Comments
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Week 5	IN	OUT	Comments
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Blood Bank Section (Five Weeks)

Background:

Blood banking, the process of collecting (donation), testing, processing, and storing blood for later use (transfusion), is a cornerstone of emergency and surgical medicine and is dependent on the clinical laboratory for ensuring the safe use of blood and its components. AABB (American Association of Blood Banks) estimates that an average of 23 million units of blood components are transfused annually in US. Blood transfusions, the introduction of blood or blood components from one person into the bloodstream of another, are essential for saving the lives of victims of trauma, for those undergoing major surgery, and for those with other causes of blood loss. Blood transfusions also are used to treat severe anemia resulting from the effects of chemotherapy, cancer, sickle cell disease, and thalassemia.

Student Learning Objectives:

Upon successful completion of this section/department, the student will be able to:

- Give an accurate definition of Blood Bank section.
- Understand how samples are received and processed.
- Complete understand about the criteria of Blood Bank sample rejection.
- Understand the principle of all automated machines.
- Know about the special tests in Blood Bank section.
- Understand the Blood Bank laboratory quality control system.
- Understand the Blood Bank procedure manual.
- Realize the limitations of the important Blood Bank tests.
- Understand the principle and procedure for cross matching.
- Be aware of how blood and platelets donors are selected.
- Define the most important blood borne infections.
- Understand the blood donation procedures.
- Characterize the procedures for antibody identification.
- Have good communication skills between him (student) and the donors.

About Blood Bank Section:

Examples of what student should know about Blood Bank Section: - Aphaeresis unit.

1. Abs screening and identification.
2. Cross matching.
3. The separation of blood components (FFP, Cryoprecipitate).
4. ABO discrepancy.
5. Cold agglutinins techniques.
6. Weak D testing (Du).

It is recommended for student to visit the aphaeresis unit and also to practicing blood withdrawal in blood bank.

كلية العلوم الطبية التطبيقيه بالدوادمى

Blood Bank Section Attendance sheet

Week 1	IN	OUT	Comments
Sun.			
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Week 2	IN	OUT	Comments
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Week 3	IN	OUT	Comments
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Week 4	IN	OUT	Comments
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Week 5	IN	OUT	Comments
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كلية العلوم الطبية التطبيقيه بالدوادمى

Histopathology Section (Six Weeks)

Background:

Histology is the study of tissue. Preparation is a prerequisite for the successful practice and study of histological techniques. To achieve this it is necessary to have stained sections.

Student Learning Objectives:

Upon successful completion of this section/department, the student will be able to:

- Give an accurate definition of Histopathology section.
- Understand the rejection criteria for Histopathology samples.
- Know about the special tests in Histopathology section.
- Understand the internal quality control system.
- Understand the Histopathology procedure manual.
- Be aware of the using of the Fluorescent Microscope for diagnostic purposes.
- Complete understand how the Histopathology samples are received and processed.
- Know the limitations for each important test.
- Understand the procedures and importance of frozen sections.
- Realize the using of different stains.
- Have general considerations about cytology section.
- Use the microtome.
- Define the important tissues using the microscope.
- Understand the general principles of immunohistochemistry.

About Histopathology Section:

Examples of what student should know about Blood Bank section:

Student should understand the basic histology:

1. Epithelium tissue.
2. Muscle tissue.
3. Connective tissue.

Example of procedures student should know:

1. Fixation procedures and aim.
2. Factors involved an affect the fixation process.
3. The small biopsies that need special treatment (renal, gastric, colonic, liver and lymph nodes).
4. Special stains: connective tissue stains, Muscular tissue stains, nucleic acids stains (DNA, RNA), Amyloid stains and lipid stains.

كلية العلوم الطبية التطبيقيه بالدوادمى

Histopathology Section Attendance Sheet

Week 1	IN	OUT	Comments
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Week 2	IN	OUT	Comments
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Week 4	IN	OUT	Comments
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Week 5	IN	OUT	Comments
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Week 6	IN	OUT	Comments
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Laboratory Management and Quality Control (Four Weeks)

Background:

Quality Control defined by ISO as "the operational techniques and activities that are used to satisfy quality requirements". An important part of the quality control is the Quality Assessment: the system of activities to verify if the quality control activities are effective, in other words: an evaluation of the products themselves. Quality control is primarily aimed at the prevention of errors. The techniques and activities involved in Quality Control can be divided into four levels of operation:

1. First-line control: Instrument performance check.
2. Second-line control: Check of calibration or standardization.
3. Third-line control: Batch control (control sample, identity check).
4. Fourth-line control: Overall check (external checks: reference samples, inter-laboratory exchange programmes).

Quality Management in the present context can be considered a modem version of the hitherto much used concept "Good Laboratory Practice" (GLP) with a somewhat wider interpretation. The OECD (Organization for Economic Co-operation and Development) Document defines GLP as follows: "Good Laboratory Practice (GLP) is concerned with the organizational process and the conditions under which laboratory studies are planned, performed, monitored, recorded, and reported."Thus, GLP prescribes a laboratory to work according to a system of procedures and protocols. This implies the organization of the activities and the conditions under which these take place are controlled, reported and filed. GLP is a policy for all aspects of the laboratory which influence the quality of the analytical work. When properly applied, GLP should then:

- ✓ allow better laboratory management (including quality management
- ✓ Improve efficiency (thus reducing costs).
- ✓ Minimize errors.
- ✓ Allow quality control (including tracking of errors and their cause).
- ✓ Stimulate and motivate all personnel.
- ✓ Improve safety.
- ✓ Improve communication possibilities, both internally and externally.

The result of GLP is that the performance of a laboratory is improved and its working effectively controlled. An important aspect is also that the standards of quality are documented and can be demonstrated to authorities and clients. This results in an improved reputation for the laboratory (and for the institute as a whole).

Student Learning Objectives:

Upon successful completion of this section/department, the student will be able to:

- Understand the importance of quality control.
- Give a brief definition about how quality control works.
- Understand how automated and close system machines are controlled.

- Understand the duties of laboratory technologist or laboratory specialist to improve the quality control.

About hospital & laboratory orientation:

Two weeks are not enough to have a complete understanding about laboratory management and quality control, but it is a good opportunity for student to have an idea about one of the important sections not only in laboratory but for the whole institution.

Laboratory Management & Quality Control

Attendance sheet

Week 1	IN	OUT	Comments
Sun.			
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Week 2	IN	OUT	Comments
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Week 3	IN	OUT	Comments
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Tues.			
Wed.			
Thurs.			

Week 4	IN	OUT	Comments
Sun.			
Mon.			
Tues.			
Wed.			
Thurs.			

References:

1. CDC (Center for Disease Control & Prevention).
2. Food & Agriculture Organization of the United Nations (FAO).
3. Pacific Public Health Surveillance Network (PPHSN).
4. University of Maryland, Environmental Safety. US
5. Johns Hopkins University.
6. South Carolina Department of Disabilities and Special Needs.
7. Toronto medical laboratories \ Mount Sinai Hospital
8. Microbiology Department.
9. Newcastle and North Tyneside Community Health Board.
10. A manual of Laboratory & Diagnostic Tests, 8th edition.
11. Kumar & Clark's Clinical Medicine, 7th edition.
12. AABB official web site.
13. Other related web pages.

كلية العلوم الطبية التطبيقيه بالدوادمى

Kingdom of Saudi Arabia

Ministry of Higher Education

Shaqra University

College of Applied Medical Sciences

Clinical Laboratory Science Department

بسم الله الرحمن الرحيم

المملكة العربية السعودية

وزارة التعليم العالي

جامعة شقراء

كليه العلوم الطبيه التتطبقيه

قسم المختبرات الطبيه

نموزج رقم (1)

برنامج تتدريب سنه الامتياز – قسم المختبرات الطبيه

Student Internship Program

≠	Lab. Dept.	Duration	Comments
1	Hospital & lab. orientation	One week	Introduce the intern to lab. staff, complete all paper work & get familiar with safety and infection precautions.
2	Sample receiving & processing area	Two weeks	
3	Microbiology & Parasitology	10 weeks	
4	Clinical biochemistry	10 weeks	
5	Immunology / Serology	5 weeks	
6	Hematology	5 weeks	
7	Blood Bank	5 weeks	
8	Histopathology	6 weeks	
9	Lab. Management & quality control	4 weeks	
10	Total	48 WEEKS	

نموذ ج رقم (2)

إستمارة حصر رغبات التدريب الميدانى (سنه الامتياز)

(الطلاب – الطالبات)

أولا: البيانات الاساسية

1	الاسم	.....
2	القسم :	.....
3	المستوى	.....
4	الرقم الجامعي	.....
5	المعدل التراكمي	.....
6	رقم الجوال	.....
7	العنوان	.....

ثانيا: ترتيب رغبات أماكن التدريب:

م	الرغبات	مكان التدريب	ملاحظات سبب الاختيار
1	الرغبة الاولى		
2	الرغبة الثانية		
3	الرغبة الثالثة		
4	الرغبة الرابعه		

* أذا كنت فى حاجه للمساعدة عليك مراجعه مسئول التدريب بالقسم للمساعدة فى تحديد أفضل أماكن التتدريب المناسبه لك .

د/ .....

مسئول التدريب بالقسم

د/ .....

رئيس القسم

كلية العلوم الطبية التطبيقيه بالدوادمى

نموزج رقم (3)

نموزج تقيم الطالب للتدريب – قسم المختبرات الطبيه

Student Evaluation of Clinical Internship

This form is to be filled out and turned in at a mid-semester internship.

Student Contact Information

Name of Intern: _____ Semester of Internship: _____

Mobile number: _____ Email address: _____

Clinical Internship Contact Information

Training Institution: _____Department: _____

Name of Supervisor: _____Email address: _____

Questions

These questions are designed to help students who are currently looking for internship opportunities learn more about whether this particular experience will be valuable to them. Please answer these questions honestly and thoughtfully. Rate the statements below using the following key:

5 = Strongly agree 4 = Agree 3 = Neutral 2 = Disagree 1 = Strongly Disagree NA = Not Applicable

This experience gave me a realistic preview of this career field.	5	4	3	2	1	NA
As a result of my internship, I have a better understanding of concepts, theories, and skills in my course of study.	5	4	3	2	1	NA
I was given adequate training or explanation of projects.	5	4	3	2	1	NA
I had regular meetings with my supervisor and received constructive, on-going feedback.	5	4	3	2	1	NA
I was provided levels of responsibility consistent with my ability and was given additional responsibility as my experience increased.	5	4	3	2	1	NA
My supervisor was available and accessible when I had questions/concerns.	5	4	3	2	1	NA
The work I performed was challenging and stimulating.	5	4	3	2	1	NA
I was treated on the same level as other employees.	5	4	3	2	1	NA
I had a good working relationship with my coworkers.	5	4	3	2	1	NA
There were ample opportunities for learning.	5	4	3	2	1	NA
I feel that I am better prepared to enter the world of work after this experience.	5	4	3	2	1	NA

Was the internship paid? _____ Yes _____ No

Did you receive any other form of compensation? _____ Stipend _____ Meals _____ Other _____

Were you offered a full-time or permanent position with the organization providing the internship? _____ Yes _____ No

Would you recommend this internship to other students?

- **_____ Highly recommend**
- **_____ Recommend**
- **_____ Recommend with reservations**
- **_____ Would not recommend**

What suggestions would you give to students who may intern at this training institution in the future?

What recommendations would you give to the manager of the training institution for future internships?

Has this internship stimulated your interest in the field? Why or why not?

Additional comments

Signature _____ Date: _____

كلية العلوم الطبية التطبيقيه بالدوادمى

نموزج رقم (4)

نموزج تقيم مشرف التتدريب للطالب – قسم المختبرات الطبيه

Internship Evaluation Form

Intern Name: _____ Date: From __ /__/____ To __/__/____

Intern No: _____

Institution name: _____ Department_____

Rate intern in each performance category. Include supporting examples for each performance factor.

E = EXCEPTIONAL I = IMPROVEMENT RECOMMENDED

S = SATISFACTORY U = UNSATISFACTORY

Performance Factors	E	S	I	U	**Comments and Supporting Examples**
Quality Consider accuracy, comprehensiveness and orderliness of work compared to the expectations for an intern.					
Quantity Consider speed and volume of work produced compared to the expectations for an intern.					
Initiative Consider the ability to be a self-starter and work independently					
Knowledge/Learning Ability Consider the ability of using scientific facts and the ability to learn and to apply the knowledge and skills effectively compared to the expectations for an intern.					
Problem Solving/Decision Making Consider the ability to identify, analyze and solve problems. Suggest viable alternatives and analyze impact of decisions before executing them.					
Judgment Consider the ability to make logical and sound decisions and to know then to act independently or to seek assistance.					
Punctuality/Attendance					

Consider adherence to the work schedule and promptness in notifying supervisor of absence.					
Work Habits Consider to what extent the intern displays a positive, cooperative attitude toward work assignments & requirements. Consider compliance with established work policies & procedures					
Interpersonal Skills Consider the ability to interact diplomatically and tactfully with internal and external contacts (fellows and supervisor)					
Communication Consider the ability to express oneself clearly, both verbally and in writing, and to listen well.					
Dependability Consider the ability to maintain confidentiality, complete work under deadlines, follow through on assignments, and be reliable and flexible compared to the expectations of an intern.					
Adaptability Consider the case with which the intern adjusts to any changes in duties, procedures or work environment. How well does the intern accept new ideas & approaches to work, respond appropriately to constructive criticism & to suggestions for work improvement?					

Overall Evaluation Please describe the overall performance rating for the intern.					* Please underline the most acceptable choice for overall evaluation: - a- Exceptional b- Satisfactory c- Improvement recommended d- Unsatisfactory GENERAL COMMENTS:- _____

كلية العلوم الطبية التطبيقيه بالدوادمى

نموزج رقم (5)

نموذج طلب اجازة خلال فترة الامتياز

سعادة المشرف على التتدريب /

السلام عليكم ورحمه الله وبركاته

أرجو من سعادتكم قبول أعتذارى عن حضور للتدريب

الموافق / أجازة بعذر واحتساب يوم/أيام

بسبب ( )

منعنى من الحضور للتدريب على ان يعاد اضافه عدد ايام الاجازة الى فتره التدريب فى نهايه مدة التدريب بحيث يكون مدة التدريب الفعليه كامله وغير منقوصه ويتاخر تخرجى لحين تعويض ما فاتنى من تدريب خلال مدة الاجازه.

وتفضلو بقبول فائق الاحترام

الاسم الرباعي /: .....

الجامعة :..... الكلية :.....

الرقم الجامعى .....لقسم :.....

التوقيع .....

تصديق المشرف

الاسم د/: .....

أن الطالب / الطالبة : .....

مقيد بالتتدريب في كلية : ..... قسم :.....

في السنة الدراسية 143 / 143 ويحمل الرقم الجامعي .....

كلية العلوم الطبية التطبيقيه بالدوادمى

نموزج رقم (6)

نموزج الحضور – قسم المختبرات الطبيه

Attendance sheet

Week 1	IN	OUT	Comments
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Week 2	IN	OUT	Comments
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Week 8	IN	OUT	Comments
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كلية العلوم الطبية التطبيقيه بالدوادمى

(نموذج رقم 7)

نموذج شهاده أداة سنه الامتياز

Kingdom of Saudi Arabia
Ministry of Higher Education
Shaqra University
College of Applied Medical Sciences

المملكة العربية السعودية
وزارة التعليم العالى
جامعة شقراء
كلية العلوم الطبية التطبقية

جامعة شقراء
Shaqra University

شهادة إتمام فترة الإمتياز

Certificate of Clinical Internship Completion

This is to certify that

تشهد كلية العلوم الطبية التطبقية بجامعة شقراء بأن

ALSHEHRI, FAEZ FALAH A (42504323)
Date of Birth: 09/06/1986 G

الطالب/ فائز فلاح الشهرى (42504323)
تاريخ الميلاد : 1 / 1 /1415 هـ

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قد أكمل بنجاح سنة الإمتياز الأجبارية حسب أنظمة الكلية
فى تخصص المختبرات الطبية

from 8/6/2014 to 8/6/2015 G

خلال الفترة من 15/ 8 / 1435 هـ الى 20 /8/ 1436 هـ

عميد كلية العلوم الطبية التطبقية
Dean, College of Applied Medical Sciences

د/ أحمد إبراهيم اليحيى
DR. AHMED IBRAHIM ALYAHYA

Date of Issue: 15 June 2015

حرر فى 25 / 8 / 1436 هـ

كلية العلوم الطبية التطبيقيه بالدوادمى

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