



برنامج دبلوم فني المختبرات الطبية



نبذه عن المعهد:

معهد الجامعة للعلوم الطبية هو معهد طبي خاص تأسس في مدينة ذمار عام ٢٠٠٤م عُرف سابقاً باسم معهد الجامعة للعلوم الطبية والتقنية، بترخيص من وزارة الصحة العامة والسكان كأول مؤسسة تعليمية خاصة في المحافظات الوسطية، وقد ارتبط تأسيس المعهد في محافظ ذمار بالحاجة الملحة لتغطية متطلبات المحافظة وما جاورها من الكوادر الطبية في المرافق الحكومية والخاصة. سعى المعهد ضمن خطته الاستراتيجية في توسيع نشاطه وخدماته في محافظات أخرى، ففي العام ٢٠٠٦م تم فتح فرع للمعهد بإمارة العاصمة – صنعاء، وفي العام ٢٠٠٨م فتح فرع للمعهد في محافظة تعز. ويسعى المعهد ضمن خطة الاستراتيجية إلى استحداث عدد من البرامج الجديدة خلال العام ٢٠٢٦م تلبي احتياجات سوق العمل وتسهم في تحقيق التنمية المستدامة.

يعتمد نظام الدراسة في معهد الجامعة على نظام الساعات المعتمدة الذي تُقسم السنة الدراسية بموجبه إلى فصلين دراسيين مدة كل منهما (١٦) أسبوعاً دراسياً. مدة الدراسة في أي قسم من أقسام معهد الجامعة كانت لمدة سنتين لأربع دُفع، وفي عام ٢٠٠٨ تحول فترة الدراسة بالدبلوم لـ ٣ سنوات دراسية، يُمنح بعدها الطالب الذي اجتاز جميع المقررات درجة الدبلوم العالي، كما يقدم المعهد حوالي ٢٤ منحة دراسية مجانية سنوياً إسهاماً لخدمة المجتمع.

تخرج من معهد الجامعة ٢٠ دفعة حتى نهاية العام ٢٠٢٥م أول دفعة تخرجت بنظام السنتين في العام ٢٠٠٥/٢٠٠٦م وأول دفعة بنظام الثلاث سنوات في العام ٢٠١٠م خريجي معهد الجامعة للعلوم الطبية يشغلون حالياً الكثير من المناصب المهنية والإدارية في القطاعين العام والخاص.

ولم يتوقف عطاء المعهد عند منح شهادة الدبلوم العالي بل استمر في التوسع والتطوير وكان اللبنة الأولى لإنشاء مؤسسة الحكمة التعليمية التي تتضمن (معهد الجامعة للعلوم الطبية – كلية الحكمة للعلوم الطبية والتقنية – جامعة الحكمة).

أقسام المعهد:

يوجد في معهد الجامعة للعلوم الطبية بمركزه الرئيس بمدينة ذمار وفرعيه في أمانة العاصمة صنعاء وتغز عدد (٧) أقسام، كما يوضحه الجدول التالي:

جدول: أقسام المعهد بالمركز الرئيس والفروع

القسم	المركز الرئيس محافظة ذمار	أمانة العاصمة صنعاء	محافظة تعز
فني صيدلة	✓	✓	✓
فني مساعد طبي	✓	✓	✓
فني مختبرات طبية	✓	✓	✓
فني أسنان	✓	✓	✓
مساعد طبيب أسنان	/////	/////	✓
فني قبالة	✓	✓	/////
فني تمريض	✓	✓	✓

نظام الدراسة في المعهد:

يدرس معهد الجامعة للعلوم الطبية المنهج الدراسي المعتمد من وزارة الصحة العامة والسكان والذي تم تعميمه على جميع المعاهد الصحية الخاصة في الجمهورية اليمنية، ويعتمد المعهد نظاماً تعليمياً على النحو الآتي:

-  نظام الدراسة: الساعات المعتمدة.
-  عدد الساعات المعتمدة للبرنامج: (١٠٥).
-  عدد الفصول: فصلان دراسيان في السنة.
-  مدة الفصل: ١٦ أسبوعاً.
-  مدة الدراسة: ٣ سنوات (٦ فصول دراسية).
-  الشهادة: دبلوم عالي فني مختبرات طبية.

رؤية ورسالة وأهداف المعهد:

الرؤية:

الريادة محلياً والتميز إقليمياً في التعليم والتدريب الصحي.

الرسالة:

تقديم برامج تعليمية وتدريبية صحية وفقاً لمعايير الجودة والاعتماد، لإعداد كوادر صحية مؤهلة علمياً ومهنياً وملتزمة بأخلاقيات المهنة؛ لتلبية احتياجات سوق العمل المحلي والإقليمي، والمساهمة في تحسين الخدمات الصحية وخدمة المجتمع وتحقيق التنمية المستدامة، من خلال بيئة تعليمية وتدريبية وبحثية محفزة وشراكات فاعلة.

الأهداف:

1. تطوير وتقديم برامج تعليمية وتدريبية صحية نوعية تواكب المستجدات العلمية وفقاً لمعايير الجودة والاعتماد الأكاديمي.
2. إعداد كوادر صحية مؤهلة علمياً ومهنياً وملتزمة بأخلاقيات المهنة وتلبي احتياجات سوق العمل المحلي والإقليمي.
3. تنمية قدرات الكادر الأكاديمي والإداري وتطويرها من خلال برامج التأهيل والتدريب المستمر، بما يساهم في رفع كفاءة الأداء وتحسين جودة المخرجات.
4. تطوير البنية التحتية والمعامل والتجهيزات، بما يضمن توفير بيئة تعليمية وتدريبية وبحثية داعمة للجودة والتميز.
5. تعزيز الشراكات والتعاون مع المؤسسات الأكاديمية والصحية والجهات ذات العلاقة لدعم التعليم والتدريب والبحث العلمي، وتبادل الخبرات.
6. الإسهام في خدمة المجتمع من خلال تنفيذ البرامج التدريبية والاستشارية والتوعوية والمبادرات الصحية، بما يدعم تحقيق التنمية الصحية المستدامة.

القيم:

- ✓ الأخلاقيات المهنية
- ✓ الجودة والتميز
- ✓ العمل بروح الفريق
- ✓ الريادة والتطوير المستمر.
- ✓ المسؤولية المجتمعية.
- ✓ الشفافية والمساءلة.

رؤية ورسالة وأهداف قسم فني مختبرات طبية:

الرؤية:

الريادة محليا والتميز إقليمياً في مجال التعليم الفني للطب التشخيصي المخبري.

الرسالة:

تقديم برنامج تعليمي وتدريبى وفق معايير الجودة والاعتماد؛ لإعداد كوادر مؤهلين علمياً ومهنياً ومتحليين بأخلاقيات المهنة، لتلبية احتياجات سوق العمل الصحي المحلي والإقليمي، من خلال بيئة تعليمية وتدريبية وبحثية محفزة، وشراكات فاعلة، بما يسهم في تعزيز تعليم الطب التشخيصي المخبري وخدمة المجتمع وتحقيق التنمية الصحية المستدامة.

الأهداف:

١. تقديم برنامج تعليمي وتدريبى وتطويره باستمرار وفق معايير الجودة والاعتماد الأكاديمي.
٢. تزويد الطلاب بالمعارف العلمية والمهارات التطبيقية الحديثة لإعداد مؤهلين علمياً ومهنياً ملتزمين بأخلاقيات المهنة وقادرين على المنافسة وتلبية احتياجات سوق العمل الصحي المحلي والإقليمي.
٣. الارتقاء بمستوى أداء الهيئة التدريسية والتدريبية بالقسم وتنمية قدراتهم لمواكبة المستجدات العلمية والتقنية في الطب التشخيصي.
٤. تحديث البنية التحتية والمختبرات التعليمية بالقسم وتزويدها بأحدث التقنيات لتهيئة بيئة تدريبية وعملية تدعم جودة المخرجات والبحوث التطبيقية.
٥. تعزيز التعاون والشراكات الفاعلة مع المستشفيات، والمراكز الطبية التشخيصية، والجهات ذات العلاقة لضمان جودة التدريب الميداني وتبادل الخبرات.
٦. الإسهام في خدمة المجتمع اليمني من خلال تقديم خدمات مخبرية تشخيصية، وبرامج توعوية، والمشاركة في المبادرات والبحوث الصحية التي تدعم التنمية الصحية المستدامة.

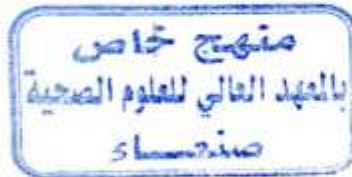
الأخلاقيات المهنية لفني المختبرات الطبية:

يلتزم فنيو المختبرات الطبية بتقديم خدمات مخبرية وتشخيصية دقيقة وآمنة ونزيهة، سواء بصورة مستقلة أو ضمن فريق الرعاية الصحية وتحت إشراف المختصين، وذلك وفق المبادئ الآتية:

- **السرية والنزاهة:** المحافظة على سرية معلومات المرضى ونتائج الفحوصات، وحماية خصوصيتهم، وتجنب تضارب المصالح، والالتزام بالأمانة العلمية ودقة النتائج.
- **احترام المريض وكرامته:** معاملة جميع المرضى بعدالة ومساواة دون تمييز، واحترام حقوقهم وخصوصيتهم، والحصول على الموافقة المستنيرة عند الحاجة، والالتزام بالحدود المهنية.
- **السلامة المهنية:** تطبيق معايير السلامة الحيوية ومكافحة العدوى، واستخدام وسائل الوقاية الشخصية، والتعامل الآمن مع العينات والمواد الخطرة والنفايات الطبية، بما يحمي المرضى والعاملين والبيئة.
- **المسؤولية والمساءلة:** تحمل المسؤولية عن جودة الخدمات ونتائج الفحوصات، والعمل ضمن حدود الكفاءة المهنية، والإبلاغ عن الأخطاء أو الممارسات غير الآمنة أو غير الأخلاقية.
- **الاحترافية والتطوير المهني:** الالتزام بالسلوك المهني والتواصل الفعال، والمحافظة على نزاهة المهنة، وتنمية المعارف والمهارات من خلال التعلم والتدريب المستمر.
- **التعاون وتحسين الجودة:** العمل بروح الفريق مع مختلف التخصصات الصحية، والمساهمة في تحسين جودة الخدمات المخبرية، وتبادل المعرفة والخبرات مع الزملاء والطلاب بما يعزز جودة الرعاية الصحية.



Republic of Yemen
Ministry of public health & Population
High Institute of health Sciences – Sana'a



DIPLOMA in MEDICAL LABORATORY TECHNICIAN CURRICULUM



October
2019

Third edition

منهج فني المختبرات الطبية نظام ثلاث سنوات

معتمد من رئيس المجلس العام للمعاهد العليا للعلوم الصحية
معالي وزير الصحة العامة والسكان

*Diploma in medical laboratory technician prepared by High Institute of Health Sciences – Sana'a
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المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

October
2019

Program Specification

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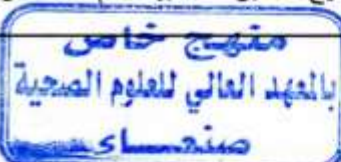


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منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



Institute Vision:

To provides high quality health and technical education and training that meet the needs of the society and market through the provisions of health workers locally and regionally; and which contribute to the provision of health research and consultancy.

Institute Mission:

To provides pre- and in-service training and qualification for technical health staff; and to contribute to the provision of health research and consultancy so as to be responsive to the needs of the society and market through the improvement of training and education in accordance with the quality and accreditation requirements.

Institute Goals:

- 1- Institutional capacity building of the institute.
- 2- Developing study programs according to quality assurance and accreditation standards.
- 3- Developing and completing the institute infrastructure according to the needs of study programs.
- 4- Capacity building of the teaching staff at the institute.
- 5- Developing and activating students' affairs system according to quality assurance and accreditation standards.
- 6- Developing and activating the institute relations with partners to help achieve mutual interests.
- 7- Developing the institute capacities in community service, research, and consultancy.



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظم ثلاث سنوات 2019

Participants of the Program Designing

Supervisor	Dr. Saleh Salim Bahaj	Sana'a university
Experts	Dr. Abdulrazzaq Othman Al-agbare	HIHS
	Dr. Fatima Al- Wathaf	HIHS
	Dr. Shawqi Abdo Mohammed Al-Shameri	HIHS
	Dr. Abdulrahman Ali Zabad	HIHS
	Dr. Tariq Al Hidabi	HIHS
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	Dr. Abdullah moslam	Deputy dean of HIHS
	Dr. Tunis Mohammed Thabet	HIHS

منهج خاص
بالمعهد العالي للعلوم الصحية
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المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information:

Program title:

Diploma of Medical Laboratories

Program duration:

Three Years – Six Semesters

Total of credit hours:

105 credit hours (1 credit hour = 16 actual hour – Theory, 32 actual hours – Lab., 48 actual hours – Clinical)

Type of certificate:

Diploma – post Secondary School

Donor certificate

High Institutes of Health Sciences

Program Section

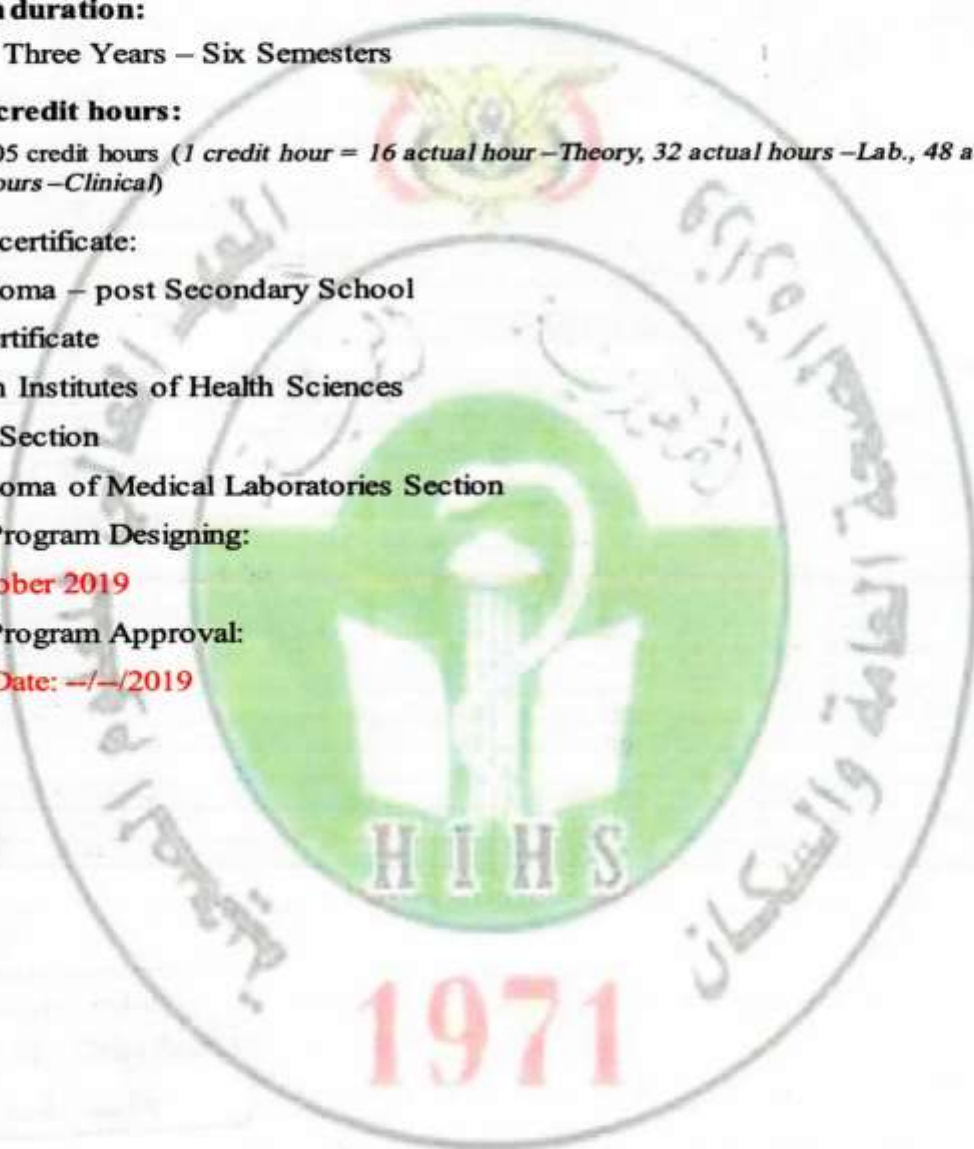
Diploma of Medical Laboratories Section

Date of Program Designing:

October 2019

Date of Program Approval:

Date: --/--/2019





Professional Information:

Program aims:

1. Recognize the role of Medical Laboratory Technologist in health care system.
2. Recognize the importance of the laboratory in the diagnosis, treatment and prevention of diseases.
3. Organizes and set-up a laboratory unit in primary health centers, hospitals and clinics.
4. Competently participate to the provision of accurate diagnostic information to the physician through performance of a vast array of laboratory tests.
5. Carry out comparative evaluation of the best possible methods of performance of these tests.
6. Operate sophisticated laboratory equipment and perform troubleshooting and corrective action on them

General Objectives:

After going through four semesters of theory and practical course, the student should be able to:

1. Collect blood samples from the patients for investigations in haematology and biochemistry lab.
2. Collect and process the samples of urine, stool and other body fluids.
3. Prepare culture plates. To have clear concept of microorganisms and the practical knowledge of culture & sensitivity tests and also the staining procedures.
4. Explain the techniques of sterilization used in the laboratory.
5. Explain production, shape and composition of normal blood. To perform complete blood count (CBC), preparation of blood films and its staining by Romanowsky and other special stains applied in cases of leukaemia. To perform exercises of investigations of Anaemia and Coagulation disorders.
6. Have sufficient knowledge of techniques of clinical chemistry and practical training to perform biochemical tests by the kits and on the analyzer.
7. Process the samples of stool and blood and identify the parasites.



8. Perform blood grouping, compatibility procedures, Coomb's tests. Should have sufficient knowledge of handling of donor and donor reactions, pretransfusion testing, preparation, storage and supply of blood.
9. Have knowledge of common infections prevailing in the hospitals and its control.
10. Know the significance of quality control in the laboratory and its application
11. Handle computers and its application in the laboratory.

Job description for the medical Laboratory Technology Technician

Job title: Medical Laboratory Technology Technician

Job eligibility: diploma certificate course of three years

Job definition: Laboratory Technician is trained to manage and work in a laboratory, where all the routine and special tests are carried out.

Job profile: The duties of the laboratory technician in the hospital laboratory shall be as follows;

1. Collection, Labeling and dispatch of samples of blood, urine, stool, sputum and body fluids for hematological, biochemical and microbiological investigations.
2. To perform routine and special hematological tests for Anaemia, Leukaemia and Coagulation disorders by manual and automated techniques.
3. Operation of Automated Biochemistry Analyzer and performing all the biochemical tests including lipid profile on the analyzer, as well as by the kits manually.
4. Preparation of culture medias, inoculation of organisms, culture & sensitivity tests, staining and sterilization techniques used in the laboratory.
5. Complete examination of urine and processing of other body fluids.
6. Collection of blood from the blood donor. Screening of blood for blood transmissible diseases, preparation of blood components and their storage, compatibility procedures and issuing of blood in the blood bank.
7. Processing of blood and stool specimens for examination of parasites.
8. To perform exercise of quality control of chemicals, reagents and equipments in all the sections of laboratory.
9. Maintenance of records of the laboratory.



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10. To maintain sufficient and regular supply of chemicals, reagents and all other consumables by coordinating with the central store.
11. Calibration, maintenance and periodic checkup of all automated equipments.
12. To follow all the safety measures in the laboratory and to act according to laid down procedures in cases of an accident.
13. To reduce the "turnaround time" of reports and blood products and maintain liaison with the clinicians.
14. To carry a pleasant personality and be polite and gentle to patients as well as your own colleagues.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding:

- a.1. Describe the common diseases and their causative agents, how is spreading, and how is diagnose it.
- a.2. Demonstrate the methods of metabolism and normal ranges of each metabolites.
- a.3. Explain the different procedures of techniques.
- a.4. Detect methods of collection, preservation, transportation of specimens.
- a.5. Demonstrate procedures of sterilization, disinfection, biosafety and quality of laboratories.

Strategies of Teaching and Learning:

1. Improved lecture.

Assessment & Evaluation Methods:

1. Essay Questions
2. MCQs



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B. Intellectual skills:

- b.1. Choose the appropriate and suitable procedure for specimens collection and testing.
- b.2. Predict for biosafety and control of infections.
- b.3. Classify the causative agents of common diseases in Yemen.
- b.4. Interpret the results of routine tests of lab.
- b.5. Conclude error sources in tests procedures.

Strategies of Teaching And Learning:

1. Problem solving
2. Case Study

Assessment & Evaluation Methods:

1. Problem solving questions
2. Case Study questions



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C. Professional & Practical skills:

- c.1. Perform collection of all different laboratory specimens.
- c.2. Prepare all specimens, stains, media, and solutions.
- c.3. Measuring concentration of all metabolites, hormones, and enzymes.
- c.4. Perform all serological tests for common diseases.
- c.5. Perform all routine haematology tests.
- c.6. Diagnose all types of parasites.
- c.7. Isolate and identify the common bacteria and detect antibiotic susceptibility.
- c.8. Apply different tests on different automated apparatus.
- c.9. Perform autoclaving, disinfectant, biosafety, and quality control.
- c.10. Perform the tests of blood bank.

Strategies of Teaching And Learning:

1. Practical training in laboratory
2. Field training

Assessment & Evaluation Methods:

1. Practical exam.
2. Field training exam

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بالمعهد العالي للعلوم الصحية
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D. Transferable skills:

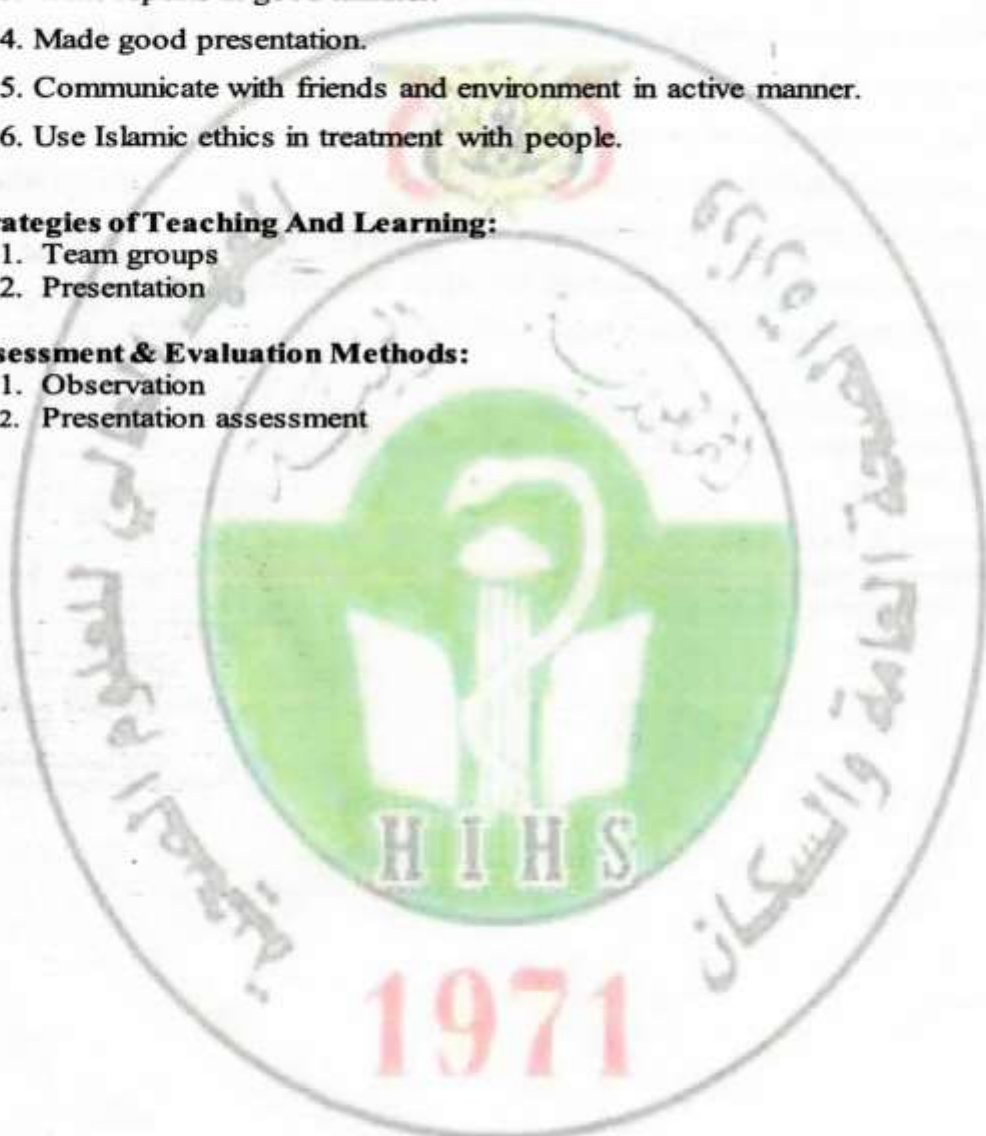
- d.1. Plan for laboratory management.
- d.2. Administrate the team work with activity.
- d.3. Write reports in good manner.
- d.4. Made good presentation.
- d.5. Communicate with friends and environment in active manner.
- d.6. Use Islamic ethics in treatment with people.

Strategies of Teaching And Learning:

- 1. Team groups
- 2. Presentation

Assessment & Evaluation Methods:

- 1. Observation
- 2. Presentation assessment





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E. Curriculum structure and contents of the program

- 1) Total Credit Hours: 105 credit hours
- 2) Training Credit Hours: 20 credit hours- Lab credit hours: 44 credit hours -Theory credit hours: 41 credit hours.
- 3) Specialized courses credit hours: Number (88) Percentage: (83.81%)

Course Name	Number of Credit Hours				ILOs covered
	T.	Lab.	Cl.	Total	
Basic biochemistry	2	0	0	2	a5, c3, d4
Clinical chemistry I	1	2	0	3	a2, a3, b1, b4, b5, c1, c3, c8, d4
Clinical chemistry II (enzymology)	1	2	0	3	a2, a3, a5, b4, b5, c1, c3, c8, d4
Clinical chemistry III (hormones and electrolytes)	1	2	0	3	a2, a3, a5, b1, b4, b5, c1, c3, c8, d4
Body fluids	1	2	0	3	a4, a5, b4, b5, c1, d3, d4
Basic microbiology	1	2	0	3	a3, b4, b5, c1, c2, c7, c9, d4
Systemic bacteriology I	1	2	0	3	a3, a5, b3, b4, b5, c2, c7, c9, d4
Systemic bacteriology II	1	2	0	3	a3, a5, b2, b3, b4, b5, c2, c7, c9, d4
Diagnostic bacteriology	1	4	0	5	a1, a3, a4, a5, b1, b3, b4, b5 c2, c7, c9, d2, d3, d4
Virology	1	1	0	2	a1, a3, a4, a5, b3, b5, c4, c8, d4
Mycology	1	1	0	2	a1, a3, a4, a5, b3, b4, b5, c1, d4
Medical laboratory technology	1	2	0	3	a4, a5, b2, c9, d1, d4, b4, b5, d4
Hematology I	1	2	0	3	a3, a4, a5, b4, b5, c1, c2, c5, d2, d4
Hematology II	1	2	0	3	a3, a4, a5, b4, b5, c2, c5, d3, d4
Hematology III	1	2	0	3	a3, a4, a5, b4, b5, c2, c5, d3, d4
Parasitology I	2	2	0	4	a2, a4, a5, b2, b3, b4, b5, c6, d2, d4
Parasitology II	2	2	0	4	a1, a3, a5, b2, b3, b4, b5, c2, c6,
Diagnostic parasitology	1	2	0	3	a4, a5, b1, b4, b5, c2, c6, d2, d3, d4
Basic immunology	2	2	0	4	a3, a5, b4, b5, c4, d3, d4
Clinical immunology	1	1	0	2	a5, a3, b4, b5, c1, c4, c8, d3, d4
Blood banking I & II	2	4	0	6	a3, a4, a5, b4, b5, c4, c10, d4
Quality control	1	0	0	1	a5, b5, c9
Filed training	0	0	20	20	
Total	27	41	20	88	

T: Theory

Lab: laboratory,

Cl.: Clinical HS-

Lab: Health Sciences- Laboratories

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Curriculum structure and contents of the program

4) Specialized courses credit hours: Number (88) Percentage: (83.81%)

Course Name	Number of Credit Hours				ILOs covered
	T.	Lab.	Cl.	Total	
Biochemistry (introduction- metabolism- enzymology- hormones and electrolytes- body fluids)	6	8	0	14	
Microbiology (introduction- systemic- diagnostic- virology- mycology)	6	12	0	18	
Medical laboratory technology	1	2	0	3	
Hematology	3	6	0	9	
Parasitology	5	6	0	11	
Immunology & Serology	3	3	0	6	
Blood banking	2	4	0	6	
Quality control	1	0	0	1	
Field training	0	0	20	20	
Total	27	41	20	88	

T: Theory

Lab: laboratory

Cl.: Clinical HS-Lab: Health Sciences - Laboratories

5) Program requirements CH: Number (8) Percentage: (7.62%)

Course Name	Number of Credit Hours				ILOs covered
	T.	Lab.	Cl.	Total	
Analytical chemistry	1	1	0	2	
First aids	1	1	0	2	
Anatomy & Physiology	2	0	0	2	
Health statistics	1	1	0	1	
Health management	1	0	0	1	
Total	6	2	0	8	

T: Theory

Lab: laboratory

Cl.: Clinical HS-Lab: Health Sciences - Laboratories

6) Institute requirements CH: Number (9) Percentage: (8.57%)

Course Name	Number of Credit Hours				ILOs covered
	T.	Lab.	Cl.	Total	
English language	4	0	0	4	
Islamic education	1	0	0	1	
Public health	1	0	0	1	
Basic epidemiology	1	0	0	1	
Computer skills	0	1	0	1	
Research methodology	1	0	0	1	
Total	8	1	0	9	

T: Theory

Lab: laboratory

Cl.: Clinical

HS-Lab: Health Sciences - Laboratories



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Plan of the program (Program courses)

1st Year – 1st Semester:

Code No.	Course Name	Number of Credit Hours			Contact hours
		T.	Lab.	Cl.	
HS-LAB-111	Anatomy & Physiology	2	0	0	32
HS-LAB-112a	Basic of biochemistry	2	0	0	32
HS-LAB-113	Analytical chemistry	1	1	0	48
HS-LAB-114a	Basic of microbiology	1	2	0	80
HS-LAB-115	Medical laboratory technology	1	2	0	80
HS-LAB-116	Public health	1	0	0	16
HS-LAB-117	Basic epidemiology	1	0	0	16
HS-LAB-118	First aids	1	1	0	48
HS-LAB-119	Computer skills	0	1	0	32
HS-LAB-1110a	English language I	2	0	0	32
HS-LAB-1111	Islamic education	1	0	0	16
Total		13	7	0	432

T: Theory

Lab.: laboratory

Cl.: Clinical

HS-LAB-N₁N₂N₃: Health Sciences-Laboratories-Year No. -Semester No. -course No.

1st Year – 2nd Semester:

Code No.	Course Name	Number of Credit Hours			Contact hours
		T.	Lab.	Cl.	
HS-LAB-1212a	Hematology I	1	2	0	80
HS-LAB-124b	Systemic bacteriology I	1	2	0	80
HS-LAB-1213a	Parasitology I	2	2	0	96
HS-LAB-122b	Clinical chemistry I	1	2	0	80
HS-LAB-1214a	Basic immunology	2	2	0	96
HS-LAB-1210b	English language II	2	0	0	32
Total		9	10	0	464

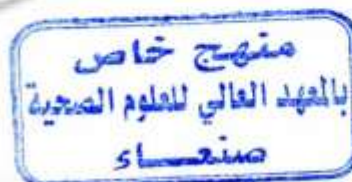
T: Theory

Lab.: laboratory

Cl.: Clinical

HS-LAB-N₁N₂N₃: Health Sciences-Laboratories-Year No. -Semester No. -course No.

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2nd Year – 1st Semester:

Code No.	Course Name	Number of Credit Hours			Contact hours
		T.	Lab.	Cl.	
HS-LAB-2112b	Hematology II	1	2	0	80
HS-LAB-2115a	Blood banking I	1	2	0	80
HS-LAB-214c	Systemic bacteriology II	1	2	0	80
HS-LAB-212c	Clinical chemistry II	1	2	0	80
HS-LAB-2113b	Parasitology II	2	2	0	96
HS-LAB-2114b	Clinical immunology	1	1	0	48
HS-LAB-2116	Body fluids	1	2	0	80
Total		8	13	0	544

T: Theory

Lab.: laboratory

Cl.: Clinical

HS-LAB-N₁N₂N₃: Health Sciences-Laboratories-Year No. -Semester No. -course No.

2nd Year – 2nd Semester:

Code No.	Course Name	Number of Credit Hours			Contact hours
		T.	Lab.	Cl.	
HS-LAB-222d	Clinical chemistry III	1	2	0	80
HS-LAB-2212c	Hematology III	1	2	0	80
HS-LAB-224d	Diagnostic bacteriology	1	4	0	160
HS-LAB-2213c	Diagnostic parasitology	1	2	0	80
HS-LAB-2215b	Blood banking II	1	2	0	80
HS-LAB-2217	Virology	1	1	0	48
HS-LAB-2218	Mycology	1	1	0	48
Total		7	14	0	576

T: Theory

Lab.: laboratory

Cl.: Clinical

HS-LAB-N₁N₂N₃: Health Sciences-Laboratories-Year No. -Semester No. -course No.



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3rd Year – 1st Semester:

Code No.	Course Name	Number of Credit Hours			Contact hours
		T.	Lab.	Cl.	
HS-LAB-3119	Quality control	1	0	0	16
HS-LAB-3120	Research methodology	1	0	0	16
HS-LAB-3121	Health statistics	1	0	0	16
HS-LAB-3122	Health management	1	0	0	16
HS-LAB-3123a	Filed training I	0	0	9	432
Total		4	0	9	496

T: Theory

Lab: laboratory

Cl.: Clinical

HS-LAB-N₁N₂N₃: Health Sciences-Laboratories-Year No. -Semester No. -course No.

3rd Year – 2nd Semester:

Code No.	Course Name	Number of Credit Hours			Contact hours
		T.	Lab.	Cl.	
-	Hematology	0	0	3	144
-	Parasitology	0	0	2	96
-	Clinical chemistry	0	0	2	96
-	Microbiology	0	0	2	96
-	Blood bank	0	0	1	48
-	Immunology & Serology	0	0	1	48
HS-LAB-3123b	Filed training II	0	0	11	528
Total		0	0	11	528

T: Theory

Lab: laboratory

Cl.: Clinical

HS-LAB-N₁N₂N₃: Health Sciences-Laboratories-Year No. -Semester No. -course No.

Comprehensive exams in the following subjects:

- 1) Hematology
- 2) Parasitology
- 3) Clinical chemistry
- 4) Microbiology
- 5) Blood Banking
- 6) Immunology & Serology





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Program Admission Requirements

1. She/he has a secondary school certificate.
2. She/he should be success in the acceptance exam.

Teaching Staff & Assistances

1. Number of teaching staff: (11)
2. Number of Assistances staff: (—)

Evaluation of program

Evaluator	Tool	Sample
1- Senior students	Test papers	30%
2- Alumni	Questionnaire	30%
3- Stakeholder (Employers)	Questionnaire	10%
4- External evaluator(s) (External examiner(s))	Check list	30%
5- Other	None	None



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صنعاء

October
2019

Courses Specification

First Year – First Semester





Course Specification Of Anatomy & Physiology

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Basic Information

Course title:

Anatomy & Physiology

Donor certificate:

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-111

Course semester:

1st year – 1st Semester

Course teaching staff:

Doctor teacher

Language used:

English languages

Course coordinator:

Dr. Amani Shamsher

Date of Specifications approval:





Professional Information

Course aims:

This course is designed to enable the students to identify the various anatomical sites and structures of the human body and their normal functions which in turn permit appreciation of the functional defects which result in pathological conditions and thus help the students judge these abnormalities through standard normal values and findings.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. describe the cell structure, function and the different types of cell.
- a.2. describe the structure and function of the cardiovascular system, lymphatic system, respiratory system, digestive system, urinary system and pituitary gland, pancreas, thyroid, parathyroid, glands
- a.3. explain the physiology of blood pressure and pulse, respiration, digestion and absorption
- a.4. explain the principles of fluids and electrolytes balance
- a.5. describe the organs constituting the male and female reproductive system and explain their functions.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Relate between the system and its functions.
- b.2. Conclude the functions of the organs

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

None

D. Transferable skills

None



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Curriculum structure and contents of the program

No.	Subject	Contact hours	Learning & teaching strategies
1	Fundamentals & cell physiology 1- Transport in, through & between cells (active, passive transport & osmosis). 2- Energy production & metabolism. 3- Electrical membrane potentials & ion channels.	4	Advance lecture
2	Nerve & muscle, physical work 1- Nerve- motor unit (neuron structure, action potential, motor end plate, contractile apparatus of striated muscle) 2- Smooth muscle contraction.	2	Advance lecture
3	Nervous system 1- CNS 2- Autonomic nervous system	2	Advance lecture
4	Blood 1- Composition & function of blood 2- Blood homeostasis 3- Immune system	4	Advance lecture Problem solving
5	Cardiovascular system 1- Cardiac circulation & cycle. 2- Myocardial oxygen supply 3- Circulatory shock	4	Advance lecture
6	Respiratory system 1- Lung function & respiration 2- Mechanism of respiration 3- Pulmonary gas exchange	4	Advance lecture
7	Urinary system 1- Kidney structure & function (renal circulation, filtration, reabsorption and excretion) 2- Body fluid homeostasis (salt, H ₂ O, acid-base balance)	2	Interactive group discussion Presentation skill
8	Acid- base homeostasis 1- Acidosis (metabolic & respiratory) 2- Alkalosis (metabolic & respiratory)	2	Advance lecture
9	Thermoregulation	2	Advance lecture
10	Nutrition & digestion 1- Steps of digestion & absorption of food components. 2- Neural & hormonal control of digestion	2	Advance lecture
11	Hormones 1- Types 2- Control & effects	2	Advance lecture
12	Hormones & Reproduction 1- Hormone control of menstrual cycle 2- Hormone control of pregnancy & birth 3- Androgen & testicular function	2	Advance lecture
Total		32	



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Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

Required Textbooks

1. Wilson KJW. Ross and Wilson Anatomy and physiology
2. Rose Human Biology
3. Guyton human anatomy – physiology

Facilities Required:

- 1- White board & Markers
- 2- Computer, internet
- 3- Data show
- 4- Models



Course Specification for Basic of Biochemistry

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صيانة مسماة

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Basic Information:

Course title:

Basic of Biochemistry

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-112a

Course semester:

1st year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Ali A. Alhaj

Date of Specifications approval:



Professional Information

Course aims:

- 1- To illustrate the students to be understand structure, properties and classification of carbohydrates, Lipids, proteins, enzymes and nucleic acids
- 2- To elucidate the students to be understand the biological importance of carbohydrates, Lipids, proteins and nucleic acids.
- 3- To enable the student to point out the biological importance of enzymes and factors affecting their activities.
- 4- To enable the student to illustrate and/or describe the metabolic pathways of carbohydrates, proteins and fats.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1 Describe the structure, properties, importance and classification of carbohydrates, Lipids, proteins, and nucleic acids.
- a.2. Determine the biological importance of enzymes and factors affecting their activities.
- a.3. Illustrate and/or describe the metabolic pathways of carbohydrates, proteins and fats.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1 Distinguish the structure of monosaccharide from disaccharide, and DNA from RNA.
- b.2. Integrate basic biomedical sciences with clinical conditions and care.
- b.3. Interpret biochemical laboratory findings

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

No practical

D. Transferable skills

- d.1. Work effectively in a group in the lab or during preparation of seminars.
- d.2. Respects the role of staff and co-staff members regardless of degree or occupation.





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Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

No.	Subject	Contact hours	Learning & teaching strategies
1	Carbohydrates: Definition, importance, chemical nature, classification (mono, oligo, poly (starch, glycogen, cellulose, agar, inulin, hyaluronic acid) and monosaccharide derivatives.	6	Advance lecture and interactive group discussions
2	Lipids: Definition, functions, classification (simple, conjugated, derived), fatty acids, and steroids.	4	Advance lecture
3	Proteins: Amino acids, classification (according to structure, polarity, nutritional, metabolic), peptides formation, proteins (definition, classification (according to function, shape, chemical classification), and structural levels of protein organization).	4	Seminars
4	Enzymes: Definition, names, active site, cofactors, zymogens, lysozymes, factors affecting reaction velocity, and enzyme inhibitors.	4	Advance lecture
5	Nucleic acids: Types, importance, structure	2	Advance lecture
6	Carbohydrate metabolism: Definition of metabolism, carbohydrate digestion and absorption, fate of absorbed glucose, glycolysis, krebs cycle, gluconeogenesis, PPP, glycogen metabolism.	6	Advance lecture
7	Proteins metabolism: Protein digestion and absorption, catabolism of amino acids, urea cycle, fate of carbon skeleton of amino acids.	2	Advance lecture
8	Lipid metabolism: Digestion and fate of absorbed lipids, fatty acid oxidation, ketone bodies, lipoproteins (LDL).	4	Advance lecture
Total			32

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

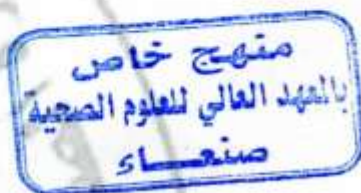
1. Robert K. et al 2012, Harper's Biochemistry, 29th edition
2. Lippincotts, illustrated, 5th edition, 2011
3. Biochemistry by Satyanarayana, 2001
4. Lecture notes

Websites:

- <https://www.biochemistry.org/>
- <http://www.biochemj.org/bj/default.htm/>
- <http://journal.chemistrycentral.com>

Facilities Required:

1. Lecture hall
2. Computer
3. Data show





Course Specification Of Analytical chemistry

HIHS

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Basic Information

Course title:

Analytical chemistry

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-113

Course semester:

1st year – 1st Semester

Course teaching staff:

Chemistry teacher

Language used:

English languages

Course coordinator:

Dr. Tunis Alansi

Date of Specifications approval:





Professional Information

Course aims:

This course provides basic concepts of analytical chemistry that helps the student understand the principles of laboratory reagents preparation.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- Classify analytical chemistry and its important.
- Explain different laboratory methods for preparation different concentrations of solutions.
- Clarify the factors affecting the solutions.

Strategies of Teaching And Learning:

- Advance lecture

Assessment & Evaluation Methods:

- Short Essay & Multiple chooses Questions.

B. Intellectual skills

- Choose the instrument and methods that suitable for tests.
- interpret laboratory tests results and error sources in lab tests.

Strategies of Teaching And Learning:

- Interactive group Discussion

Assessment & Evaluation Methods:

- Group discussion evaluation

C. Professional & Practical skills

- Prepare solutions and inductor in different concentrations.
- Practice all tests in lab .
- Perform all safety methods and quality control

Strategies of Teaching And Learning:

- Practice lab

Assessment & Evaluation Methods:

- Practical exam

D. Transferable skills

- Communicate with coworkers effectively.
- Report writing skills



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Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction: 1- Definition. 2- Classes. 3- Methods analyte.	1	Advance lecture
2	Solutions: 1- Definition for types. 2- components. 3- Classes. 4- factors effect (temperature solubility)	2	Advance lecture
3	Concentration: A. Percent %: 1- Definition. 2- Types. 3- Uses. 4- Preparation methods. 5- roles, calculate of roles.	1	Advance lecture
4	B. Molarity (normality molality) 1- Definition. 2- Roles. 3- Units. 4- Principle. 5- Calculate of roles.	4	Advance lecture Problem solving
5	C. Dilutions: 1- Definition. 2- Roles. 3- Units. 4- Calculate of roles. 5- Preparation of solutions.	1	Advance lecture
6	Concept (PH) +Buffer solution: 1- Definition. 2- Roles. 3- Types. 4- Calculate of roles. 5- Components, use, methods and important.	3	Advance lecture
7	Acids, Base and Salt:		Advanced lecture



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No.	Subject	Contact hours	Learning & teaching strategies
	1- Definition. 2- Description. 3- Properties, types, classes. 4- Reaction of acid and base.	2	
8	Titration: A. Precipitation. B. Neutralization. C. Oxidation, reduction. 1- Definition. 2- Types. 3- Indicator. 4- Roles. 5- Factor effect.	2	Advanced lecture
Total		16	

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Introduction: 1- Identify of application or materials in lab.	2	Practical Lab
2	Solutions: 1- Preparation of acid and base. 2- Detection of sol.	2	Practical Lab
3	Solutions: 1- Preparation of salt solution. 2- Detection of sol.	2	Practical Lab
4	Preparation of solution usage in laboratory	2	Practical Lab
5	Chemical equilibria: 1- Preparation solution. 2- Factors effect, for equilibria.	2	Practical Lab
6	Concentration (M.N.): 1- Preparation molar, normal solutions. 2- Calculate on roles. 3- Write the results.	2	Practical Lab
7	Percent (V/V %): 1- Preparation of solby percent. 2- Calculate on roles. 3- Write the results.	2	Practical Lab
8	Percent (W/V %): 1- Preparation of solby percent. 2- Calculate on roles. 3- Write the results.	2	Practical Lab
9	Dilution:		Practical Lab

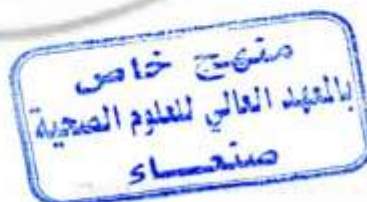


المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

N.	Subject	Contact hours	Lab. Hospital, field
	1- Preparation of diluted solutions.	2	
10	Buffer solution: 1- Preparation of solution. 2- Calculate on roles. 3- Unites.	2	Practical Lab
11	PH: 1- Measurement of PH. 2- Calculate of roles. 3- Write the results.	2	Practical Lab
12	Titration (neutralization): 1- Preparation of sol. For strong acid + strong base. 2- Calculate of roles. 3- Write the report.	2	Practical Lab
13	Titration (neutralization): 1- Preparation of sol. For weak acid + weak base. 2- Calculate of roles. 3- Write the report.	2	Practical Lab
14	Titration (neutralization): 1- Preparation of sol. (weak acid + strong base) 2- -Calculate of roles. 3- Write the report.	2	Practical Lab
15	Titration (A-Precipitin): 1- Preparation of sol. 2- Calculate on roles. 3- Write the report.	2	Practical Lab
16	B-Oxidation reduction.	2	Practical Lab
	Total	32	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%





المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Analytical chemistry, Shooj
2. Analytical chemistry volumetric
3. Analytical chemistry, 4th edition, Gray D. Christian

Facilities Required:

- 1- White board Markers
- 2- computer, internet
- 3- Data show
- 4- Laboratory requirement:
 - Burette, stand Burette, conical flask, beaker, pipette, dropper – test tube- test tube holder – glass rod
 - measuring cylinder – funnel – filter paper- spatula
 - sensitive balance –PH meter- litmus paper
 - Acid (HCl- H₂SO₄ – HNO₃...) – base (NaOH,) – salts (NaCl, AgNO₃, Na₂CO₃, Na₂HCO₃, Mg (HCO₃)₂, Mg (HCO₃)₂, Hg (HCO₃)₂, Na₂S₂O₃, FeCl₃, KI, CuSO₄,
 - Indicator (phenol red, methylene blue, PhPh, K₂Cr₂O₄)
 - KMnO₄, C₂H₂O₄, (Oxalic acid)



Course Specification for Basic Of Microbiology

HIHS

1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Basic of Microbiology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-114a

Course semester:

1st year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulrahman Ali Zabad

Date of Specifications approval:





Professional Information

Course aims:

This course describe the cell structure of microorganisms (bacteria, viruses and fungi) and provides basic principle of bacterial growth, pathogenesis, and laboratory isolation and identification of bacteria, and testing of antibiotics susceptibility.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Explain the structure, functions and features of bacterial, viral and fungal cells and their classification.
- a.2 Discuss the bacterial growth, and methods of isolation, cultivation and identification of bacteria.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Compare between different microorganism (Bacteria, viruses and fungi) on the basis of their properties, structure, and diagnostic methods.
- b.2. Differentiate between the different types of bacteria on the bases of staining and biochemical methods.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

At the end of this Course the student will be able to:

- c.1. Perform Gram staining, Ziehl-neelsen staining and preparation of bacteriological culture media.
- c.2. Perform biochemical tests and antibiotics susceptibility test

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam





D. Transferable skills

- d.1. Communicate effectively by written and oral means.
- d.2. Manage time effectively.

Strategies of Teaching And Learning:

- 1. Interactive group discussion
- 2. Oral presentation

Assessment & Evaluation Methods:

- 1. Evaluation of group discussion
- 2. Oral presentation evaluation.

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction of Microbiology: 1- Definitions 2- History of microbiology sciences 3- Branches of microbiology 4- Microbial diversity	1	Advance lecture
2	Host-pathogen relationship: 1- Parasitism 2- Normal flora 3- KOCH's postulates 4- Infection and its cycle and stages	1	Advance lecture
3	Bacterial cell structure: 1- Compositions 2- Cell wall structure 3- Functions	1	Advance lecture
4	Bacterial Growth: 1- Growth cycle 2- Growth requirements 3- Nutrition and metabolism 4- Reproduction of bacteria	1	Advance lecture
5	Cultivation of bacteria: 1- Culture media ingredients and preparation 2- Types of media 3- Inoculation of culture media 4- Incubation of bacteria	1	Interactive group discussion.
6	Classification of bacteria: 1- Morphology and biochemical classification 2- Serotyping of bacteria 3- Nucleic acid-based taxonomy 4- Clinical classification of bacteria	1	Advance lecture
7	Pathogenesis of bacteria: 1- Sources and mode of transmission	1	Advance lecture



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

No.	Subject	Contact hours	Learning & teaching strategies
	2- Virulence factors 3- Bacterial toxins. 4- Invasion and intracellular survival		
8	Laboratory diagnosis of bacteria: 1- Direct exam 2- Different staining methods 3- Gram stain 4- Zeihl-neelsen stain	1	Interactive group discussion.
9	Midterm Exam		
10	Laboratory diagnosis of bacteria: 1- Isolation 2- Biochemical identification of bacteria 3- Serotyping of bacteria 4- Nonculture methods for bacterial identification	1	Advance lecture
11	Bacterial genetics: 1- Bacterial genome 2- Mutation 3- Transfer of DNA between bacteria and recombination	1	Advance lecture
12	Antibiograms: 1- Definition 2- Antibiotics classes 3- Mode of action 4- Antibiotics resistant	1	Advance lecture
13	Antibiograms susceptibility tests: 1- Terms 2- Disc diffusion method Kirby and Bauer method 3- Dilution method, MIC and MBC	1	Interactive group discussion.
14	Sterilization and disinfection: 1- Sterilization 2- Disinfection 3- Decontamination		Oral presentation
15	Virology overview: 1- Viruses structure 2- Viral replication 3- Laboratory diagnosis of viruses	1	Advance lecture
16	Mycology overview: 1- Cell structure 2- Replication 3- Clinically classification 4- Lab diagnosis	1	Advance lecture
Total		16	

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

2- Practical Subjects:

N.	Subject	Contact hours	Lab, Hospital, field
1	Introduction to microbiology	4	Practical Lab
2	Smear preparation	4	Practical Lab
3	Gram stain	4	Practical Lab
4	Ziehl – Neelsen stain	4	Practical Lab
5	Media preparation	4	Practical Lab
6	Kirby and Bauer method, susceptibility testing	4	Practical Lab
7	Inoculation of Media	4	Practical Lab
8	Sterilization & Disinfection	4	Practical Lab
9	Catalase test	4	Practical Lab
10	Coagulase test	4	Practical Lab
11	DNA-ase test	4	Practical Lab
12	CAMP Test, Bile solubility test	4	Practical Lab
13	Urease test, Oxidase test	4	Practical Lab
14	Citrate utilization test	4	Practical Lab
15	Kligler's iron agar (KIA)	4	Practical Lab
16	Sulphur Indole Motility test (SIM)	4	Practical Lab
Total		64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

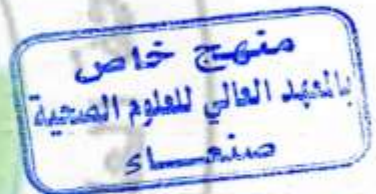
1. W. Levinson -2010- Review of medical microbiology and immunology - 11th Edition - McGraw-Hill
2. Jawetz, Melnick & adleberg's- 2010- Medical microbiology- 25th Edition- McGraw-Hill



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Facilities Required:

- White board, computer, internet, Data show, Hand notes
- Microbiology Lab:
 - 1- Microscope
 - 2- Incubator
 - 3- Autoclave
 - 4- Safety cabinet
 - 5- Centrifuge
 - 6- Bunsen burner and wire and plastic loop
 - 7- Refrigerator
 - 8- Candle jar
 - 9- Glasses
 - 10- Stains
 - 11- Bacteriological media (Nutrient agar, Nutrient broth, Blood agar, MacConkey agar, Muller hinton agar)
 - 12- Biochemical tests media and reagents (Catalase reagent, DNA-ase agar, Novobiocin disc, Bacitracin Disc, Optochin disc, Bile solubility reagent, Asculin medium, Triple sugar iron, Sulphurindole motility medium, Citrate agar, urease agar and oxidase test.
 - 13- Antibiotics discs.





Course Specification Of Medical Laboratory Technology

HIHS

1971



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Medical Laboratory Technology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-115

Course semester:

1st year – 1st Semester

Course teaching staff:

B.Sc. Clinical Laboratory Science with 4 years teaching experience. Language used

Language used:

English languages

Course coordinator:

Dr. Shawqi Abdo Mohammed Al-Shameri

Date of Specifications approval:





Professional Information

Course aims:

This course provides knowledge on safety measures, laboratory policies, safe laboratory design and the standard procedure followed during working in laboratory & the instrument and apparatus that are related to the laboratory field. It also provides skills about the instrument, principles, functions, and simple maintenance.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Mention methods of disposal samples & hazardous materials.
- a.2. Describe standard procedure followed during working in the laboratory.
- a.3. Explain the principles of laboratory instruments.
- a.4. Describe the laboratory policies, universal precautions & safe laboratory design.

Strategies of Teaching And Learning:

1. Advance Lecture.

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Suggest what each instruments needs for maintenance and calibration
- b.2. Select the proper instruments according to their specifications

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Decontaminate laboratory items, clinical samples and hazardous materials.
- c.2. Use, maintain & calibrate of various laboratory ware & instruments.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam

D. Transferable skills

- d.1. Prepare plan for organize and set-up a basic clinical laboratory.
- d.2. Order the proper laboratory items & instruments according to their specifications.



Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Laboratory safety Types of hazards, universal precautions & safety instructions, safety equipment & biowaste disposal.	1	Advance lecture
2	General Laboratory ware definitions, compositions & specifications.	1	Advance lecture
3	Pipettes: Description & specifications of Graduated, Volumetric, Pasteur, Automatic & Westergren pipettes	1	Advance lecture
4	Microscopes: Types & importance. Bright field microscope: principle, parts, lenses, magnification & specifications	1	Advance lecture
5	Centrifuge: Types, principle, components & specifications	1	Advance lecture
6	Incubator: principle, components & specifications. Water bath: principles, components & specifications.	1	Advance lecture
7	Hot air oven: principle, components & specifications. Autoclave: principle, components & specifications.	1	Group discussion Presentation 1
8	Mid-term Exam	1	
9	Stills and deionizer: Distillation & De-ionization description, principles, components & specifications. Balances: Types, principles, components & specifications.	1	Advance lecture
10	Spectroscopy: (Nature of light- Beer's law) Types, principle, components & specifications	1	Advance lecture
11	Automated haematology analyzer: Principles, basic components, parameters,	1	Advance lecture
12	Immunoassay: Different methods, principles, applications,	1	Advance lecture
13	Automated biochemistry analyzer: Principles, basic components,	1	Advance lecture
14	Role of laboratory in human health and diseases Laboratory policies (definition and principles). Laboratory services network (levels of Laboratories)	1	Group discussion Presentation
15	Safe Laboratory design & organization Basic infrastructure facilities, safety signs & designing of	1	Group discussion Presentation



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

No.	Subject	Contact hours	Learning & teaching strategies
	laboratory sections		
16	Standard Operating procedures (S.O.Ps) Contents, importance & use Results: standardization in reporting test results.	1	Advance lecture
Total			16

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	General instructions, laboratory rules, responsibilities and related safety measures.	4	Practical Lab
2	General laboratory ware: Use, care and simple maintenance of: Beakers, bottles, flasks, funnels, tubes, burette, cylinder, Petri-dishes, spatula, forceps,	4	Practical Lab
3	General laboratory ware: Use, care and simple maintenance of: Haemocytometer (Chambers), racks, wire loop, gauze net, Bunsen burner, dissector, cuvettes,	4	Practical Lab
4	Pipetting and dispensing techniques Using, calibrating and simple maintenance of: Graduated, Volumetric, Pasteur, Automatic & Westergren pipettes	4	Practical Lab
5	Preparation of Cleaning solution (Sulfuric acid-dichromate), Care and Cleaning of different Glassware	4	Practical Lab
6	Microscope: Installation & control of eyepiece, objectives, condenser & changing the lamp or a fuse lamp Use of a microscope with 10× & 40× objective.	4	Practical Lab
7	Microscope: Use of a microscope with the 100× objective. Replacement parts, and simple maintenance of the Microscope	4	Practical Lab
8	Centrifuge & Microhaematocrit centrifuge: Installation, using, cleaning, calibrating & simple maintenance	4	Practical Lab
9	Incubator & Water bath: Installation, using, cleaning, calibrating & simple maintenance	4	Practical Lab
10	Hot air oven, Autoclave Installation, using, cleaning, controlling & simple maintenance	4	Practical Lab
11	Still, Deionizer & Balances: Installation, using, cleaning, calibrating & simple	4	Practical Lab



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظم ثلاث سنوات 2019

N.	Subject	Contact hours	Lab. Hospital, field
	maintenance.		
12	Spectrophotometer: Installation, using, cleaning, calibrating & simple maintenance	4	Practical Lab
13	Automated Haematology analyzers: Operation, calibration, performing troubleshooting.	4	Practical Lab
14	Immunoassay analyzers: Operation, calibration, performing troubleshooting.	4	Practical Lab
15	Automated biochemistry: Operation, calibration, performing troubleshooting.	4	Practical Lab
16	Final Practical Exam	4	Practical Lab
	Total	64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
6	Semester work week 4
7	Participation week 6
8	Midterm exam week 8
9	Attendance week 15
10	Final term exam week 16

Learning resources:

References:

1. Required Textbooks

- 1- Chees brough Monica, 2009, **District laboratory practice in tropical countries**, Second edition, part 1, Cambridge university press.
- 2- P.B. Godkar, Text Book of Medical Laboratory Technology, 2nd edition, 2003, Bhalani Publication.

2. Essential References.

- 1- Medical Laboratory Techniques Methods and Interpretation, Ramnik Sood, Jaypee 2002.
- 2- **Clinical chemistry, Principles, Procedures and Correlations**, 5th edition, 2005, by Bishop, Fody and Choeff. Lipincott Williams & Wilkins.



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Facilities Required:

- 1- White board & Markers
- 2- CD, computer, internet
- 3- Data show
- 4- Lab instruments:
 - General laboratory-ware (glass & plastic)
 - Microscope
 - Stills and deionizers
 - Balance (sensitive & Electronic)
 - Automatic pipettes
 - Centrifuges
 - Autoclave
 - Incubator
 - Water bath and heat block
 - Spectrophotometer
 - Mixers and rotator
 - Safety equipment (Safety cabinet, fire extinguishers)
 - Automated haematology analyzer
 - Automated biochemistry analyzer
 - ELISA instrument





منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Course Specification of Public health

HIHS
1971



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Public health

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

1 Credit Hours

Code Number:

HS-LAB-116

Course semester:

1st year – 1st Semester

Course teaching staff:

Public health teacher

Language used:

English languages

Course coordinator:

Dr. Nabel Alkuhali

Date of Specifications approval:



Professional Information

Course aims

This course provides the student with the principles of the public health and to help him understand the important of public health of the community. It also provides the principles of solving some of health problems.

Intended learning outcomes (ILOs)

A. Knowledge& Understanding

At the end of the course, the student should be able to

- a.1. Define the concepts and terms related to public health and environmental and health problems affecting the health of the community
- a.2. Explain the determinants of health.
- a.3. Discuss the elements of personal hygiene and environmental health and health conditions of healthy housing.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Assesses the level of community environment and the characteristics of healthy housing.
- b.2. Establish the best ways to solve environmental problems in the community
- b.3. Interpret the health problems resulting from the negligence of personal hygiene

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional& Practical skills

- c.1. Apply the rules of personal hygiene in correctly way.
- c.2. Implement healthy sessions to raise the awareness health of community.

Strategies of Teaching And Learning:

1. Interactive group Discussion

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Assessment & Evaluation Methods:

1. Group discussion evaluation

D. Transferable skills

- d.1. Manage a discussion group about the priorities of health problems
- d.2. Plan sessions to raise awareness about the public health fields.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation - evaluation.

Curriculum structure and contents of the program:

No.	Subject	Contact hours	Learning & teaching strategies
1	Public Health Definition Health, Definition Public Health and Environment, Environmental Health.	2	Advance lecture
2	The determinants of health Introduction and the determinants of health	2	Advance lecture
3	Personal hygiene Public health, importance of personal hygiene Components of personal hygiene The Health Benefits of Physical Activity Miscellaneous: food and drink, constipation habits	3	Advance lecture
4	Periodic medical examination Importance, Components	1	Advance lecture
5	Safe water supply Water, important sources, Water pollution and Water contamination and disease purification of water	2	Advance lecture
6	Air pollution: Sources, prevention and control of air pollution	2	Advance lecture
7	Waste disposal: Solid Waste, excrete disposal, sanitary principles and methods of disposal	2	Advance lecture
8	Housing House design and health, poor housing and health	2	Advance lecture
	Total	16	



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

- 1- Community medicine, WHO publication Preventive and social medicine. K. Parls
- 2- Environmental Health Practitioner Manual: A resource manual for Environmental Health Practitioners working with Aboriginal and Torres Strait Islander Communities. Health Western Australia, 2010
- 3- International Scientific Forum on Home Hygiene
(www.ifh-homehygiene.org)
- 4- WHO, UNEP, UNRWA, Environmental Health Workers Manual pdf
<http://emro.who.int/ceha>
- 5- Teens Health. 2008. Nemours Foundation.
29 Sept. 2008
<http://kidshealth.org/teen/your_body/>.

Facilities Required:

- 1- White board Markers
- 2- computer, internet
- 3- Data show





Course Specification of Basic Epidemiology

HIHS

1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Basic Epidemiology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

1 Credit Hours

Code Number:

HS-LAB-117

Course semester:

1st year – 1st Semester

Course teaching staff:

Public health teacher

Language used:

English languages

Course coordinator:

Dr. Naef Radman

Date of Specifications approval:





Professional Information

Course aims:

This course provides the student with the principles of the epidemiology and to help him understand the important of epidemiology in the health community. it also provides the principles of epidemiological study designs.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

At the end of the course the student should be able to

- a.1. Explain the concept and principles of epidemiology.
- a.2. Describe the epidemiological approach
- a.3. Explain the strengths and limitations of epidemiological study designs
- a.4. Explain the contribution of epidemiology to the prevention of disease, the promotion of health

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Use the concept and principles of epidemiology for define actual satiation in his area;
- b.2. Differentiate between of epidemiological study designs.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

None

D. Transferable skills

- d.1. Write the report about epidemiological diseases.
- d.2. Share in the epidemiological survey.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظم ثلاث سنوات 2019

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

منهج خاص
بالمعهد العالي للعلوم الصحية

No.	Subject	Contact hours	Learning & Teaching strategies
1	Definition of Epidemiology Historical Evolution of Epidemiology Epidemiological approach: Concepts of Disease Occurrence	2	Advance lecture
2	Epidemiological Studies • Observational studies • Experimental studies • Descriptive studies • Ecological studies • Cross-sectional studies • Case-control studies • Cohort studies	6	Advance lecture
3	Measures of Risk • Morbidity Frequency Measures • Mortality Frequency Measures • Natality (Birth) Measures	2	Advance lecture
4	Communicable diseases: epidemiology surveillance and response Epidemic and endemic disease Public Health Surveillance	4	Advance lecture Problem solving
5	• Epidemiology and prevention • Level of prevention • Screening	2	Advance lecture
	Total	16	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

- Bonita, Ruth, R. Beaglehole, T. Kjellstrom(2006) Basic epidemiology, 2nd edition, World Health Organization
- Sylvia Wassertheil - Smoller(2003), Biostatistics and Epidemiology A Primer for Health and Biomedical Professionals, USA

Facilities Required:

- 1- White board & Markers
- 2- computer, internet
- 3- Data show





منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Course Specification of First aids

H I H S

1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title

First aids

Donor certificate

High Institute of Health Sciences

Program Section:

Medical laboratory section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-118

Course semester:

First year – 1st Semester

Course teaching staff:

Nurse

Language used:

English & Arabic languages

Course coordinator:

Dr. Abdelsalam Al-Aslami



Professional Information

Course aims:

At the end of the course, the student should be able to perform basic s of first aid in different emergency cases

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Explain the important basics of first aid (A, B, C, D)
- a.2. Identify important first aid steps for different important emergency cases

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Differentiate between different cases and its First Aid

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Deal properly and rapidly with different (critical) emergency cases with needed precaution.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam

D. Transferable skills

- d.1. Deal with patient in polyclinic
- d.2. give advice in different cases

منهج خاص
بالفهم العالي للعلوم الصحية
صنعاء



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

1- Theory Subjects:

N.	Subject	Contact hours	Learning & teaching strategies
1	Introduction 1. Concept of first aid 2. Objective of first aider 3. Responsibilities of first aider	1	Advanced lecture
2	Hemorrhage and cut wounds 1. External bleeding 2. Cuts wound	2	Advanced lecture & demonstration
3	Shock 1. Definition 2. Types 3. First aid treatment of shock Unconsciousness 1. Definition 2. First aid treatment 3. Heart massage Epileptic fits 1. -first aid treatment	2	Advanced lecture & demonstration
4	Splint and bandage 1. Aims of bandaging in first aid 2. Aim of splinting 3. Methods of apply bandages	2	Advanced lecture & demonstration
5	Fractures and dislocation 1. A-definition of fractures 2. Types of fractures 3. Signs and symptoms 4. First aid treatment	2	Advanced lecture & demonstration
6	B-definition of dislocation The first aid treatment	2	Advanced lecture & demonstration
7	Burns and scalds 1. Heat burns 2. Chemical scalds 3. first aid treatment	2	Advanced lecture & demonstration
8	Asphyxia 1. Artificial respiration 2. P. R	1	Advanced lecture & demonstration



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N.	Subject	Contact hours	Learning & teaching strategies
9	Poisoning 1. Types 2. Cause 3. Classification 4. Treatment Vital signs Rout of injection administration	2	Advanced lecture
Total		16	

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	1. Concept of first aid 2. Responsibilities of first aider	4	Practical Lab
2	Hemorrhage and cut wounds	4	Practical Lab
3	Shock 1. First aid treatment of shock Unconsciousness 1. First aid treatment 2. Heart massage Epileptic fits 1. -first aid treatment	4	Practical Lab
4	Splint and bandage 1. Methods of apply bandages	4	Practical Lab
5	Fractures and dislocation 1. First aid treatment dislocation 1. The first aid treatment	4	Practical Lab
6	Burns and scalds 1. first aid treatment	4	Practical Lab
7	Asphyxia 1. Artificial respiration 2. P. R	4	Practical Lab
8	Poisoning 1. Treatment Vital signs Rout of injection administration	4	Practical Lab
Total		32	

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Evaluation of course

No.	Evaluator Method	Percentage
1	Report	10
2	Presentation	10
3	Short essay	40
4	M.C.Q	40
Total		100

Evaluation table

No.	Evaluation appointment	Date of evaluation
1	First evaluation	4th Week
2	Second evaluation	8 week
3	Third evaluation	12 week
4	Final exam	16 week

Learning resources:

References:

- John Cann and Tim McCarthy, First Aid Step by Step
- David and carryl, first responder (you first response in emergency care)
- Donald Landerson first aid for the NCLEX-RN
- دليل الإسعافات الأولية – منظمة الصحة العالمية ، ترجمة الدكتور /برهان العابد – الناشر مكتبة لبنان

Facilities Required:

- Appropriate teaching class
- Computers and data show.
- Lab requirement:
 - CPR module- Bed- containers for equipment- gauze and cotton
 - Soap- Sheets and blanket- syringes with different size
 - Sphygmomanometer and stethoscope – thermometer- module for hand injection- splints and bandages – wooden splints- Crip bandages- truly- Transport bed
 - Emergency drug- disinfectant and antiseptic solution



منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Course Specification of Computer skills

HIHS

1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Computer skills

Donor certificate

High Institute of health Sciences

Program Section:

Medical laboratory section

Total of credit hours

1credit hour

Code Number:

HS-LAB-119

Course semester:

First year- 1st semester

Course teaching staff:

Computer programmer

Language used:

Arabic – English language

Course coordinator:

Mohammed Al-Shameri



Professional Information

Course aims

- Eliminate computer illiteracy.
- Increase awareness of the technical, and dissemination of information.
- Raise the level of knowledge of information technology, and mastery of computer skills and applications.
- Provides the trainees with the basic qualifications required for the information age.
- General Knowledge on the computer, the most important features, and uses.
- Dealing with the computer easily.
- Dealing with the Internet.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Using and understanding the Information Technology in our life and computer machine.
- a.2. Using and understanding some computer application in the work and life.
- a.3. Using and understanding Internet.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Describe the Computer, and its features and uses.
- b.2. Understand all component of computer.
- b.3. knowledge of information technology and internet.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Dealing & understanding the Operating System (Microsoft Windows).
- c.2. Dealing & understanding Microsoft Office word.
- c.3. Using Internet for any purpose.

Strategies of Teaching And Learning:

1. Practical computer lab





المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

➤ **Assessment & Evaluation Methods:**

1. Practical exam

D. Transferable skills

- d.1. Use computer perfectly in his work

➤ **Strategies of Teaching And Learning:**

1. Interactive group discussion
2. Oral presentation

➤ **Assessment & Evaluation Methods:**

1. Evaluation of group discussion
2. Oral presentation evaluation.





Curriculum structure and contents of the program

1) Theory Subjects:

None

2) Practical Subjects:

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

N.	Subject	Contact hours	Lab. Hospital, field
1	Introduction of Information Technology	2	Practical computer lab
2	Introduction of Computers, features, uses and component.	2	Practical computer lab
3	Storage units, Units of measurement of capacity and speed, Keyboard and Mouse.	2	Practical computer lab
4	Introduction of Operating System (Microsoft windows), Desktop, taskbar, start menu.	2	Practical computer lab
5	The Search methods, Accessories Programs.	2	Practical computer lab
6	Control Panel.	2	Practical computer lab
7	Create folder, copy, cut, paste and shortcut.	2	Practical computer lab
8	Use the storage units, how to install and use application.	2	Practical computer lab
9	Introduction of Microsoft office word and how to use standard toolbar.	4	Practical computer lab
10	How to use formatting toolbar (write and format your text).	2	Practical computer lab
11	How to tables and borders toolbar (create and format tables).	2	Practical computer lab
12	How to use drawing toolbar. (insert and format pictures, clip art, shapes, diagrams, text box and word art)	4	Practical computer lab
13	Concepts of Internet.	2	Practical computer lab
14	Internet Searching and Email Using.	2	Practical computer lab
	Total	32	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%



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Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

▪ References:

Computer (Concepts, Operating System, Application and Internet).
ICDL (International Computer Driving license) curriculum.

▪ Facilities Required:

1. Connect the computer lab. with internet.
2. Be sure all the computers is running with the required Operating System and Applications.
3. Always supply the computer lab. with a Data Sho





Course Specification of English Language I

HIHS
1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

English Language I

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-1110a

Course semester:

1st year – 1st Semester

Course teaching staff:

English specialist

Language used:

English languages

Course coordinator:

Dr. Abdulrahman Mohamed Al-Aslami.

Date of Specifications approval:



Professional Information

Course aims:

This Course focuses on the use of writing activities for medical paragraphs using medical terms and providing a knowledge base for LABARTORY students in medical English. Also, it aims to equip the students with knowledge and skills about English language to practice it in real work situations.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Define the medical terms related to course reading passages.
- a.2. Describing what people in hospital do and what different hospital departments do.
- a.3. Understand the grammatical structure in context step by step approach to writing
- a.4. learn the right vocabulary for speaking to patients and colleagues.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Analyze and write the meanings of terms.
- b.2. Formulate short paragraph and sentences.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Perform the pronunciation correctly and grammar through reading.
- c.2. Identify correct spelling of various terms and parts of terms.
- c.3. Recognize types of writing paragraph.

Strategies of Teaching And Learning:

- 1- Demonstration
- 2- USING Audio CD

Assessment & Evaluation Methods:

1. Direct observation
2. Short paragraph & Qs





المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

D. Transferable skills

d.1. Read the paragraphs fluently and Write a summary of a patient.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

Curriculum structure and contents of the program

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction to English language and Medical Terminology. - The sentence: Its analysis and structure. - General, subject and predicate, classification of sentence (on the base of their construction) - How Suffixes and Prefixes are used to form words	2	1-Advanced lecture. 2-Interactive group discussion.
2	The hospital team: - Listening: An Admission. - Vocabulary: verbs of describing hospital jobs.	2	1-Advanced lecture. 2-Interactive group discussion.
3	- Language spot: Present simple v. present continuous. - Speaking: Talking personally.	2	1-Advanced lecture. 2-Interactive group discussion.
4	- Writing: Profile of a student nurse. - Reading: the nursing profession.	2	1-Advanced lecture. 2-Interactive group discussion.
5	(2) In and around the hospital: - Vocabulary: Hospital departments - Pronunciation: Where is the stress? - Language spot: Prepositions of place and movements.	2	1-Advanced lecture. 2-Interactive group discussion.
6	- Listening: Directions. - Writing: giving directions via email	2	1-Advanced lecture. 2-Interactive group discussion.
7	- Speaking: On the wards. - Reading: wheelchairs	2	1-Advanced lecture. 2-Interactive group discussion.
8	(3) Hospital Admissions: - Vocabulary: The admissions procedure. - Listening: A patient record form.	2	1-Advanced lecture. 2-Interactive group discussion.
9	- Speaking: Admitting a patient. - Language spot: past simple v past continuous.	2	1-Advanced lecture. 2-Interactive group discussion.
10	- Reading: Bad hand writing.	2	1-Advanced lecture.



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No.	Subject	Contact hours	Learning & teaching strategies
	- Writing: patient summary.		2-Interactive group discussion.
11	(4) Accidents and emergencies: - Vocabulary: First aid. - Language spot: Instructions.	2	1-Advanced lecture. 2-Interactive group discussion.
12	- Speaking: emergency helpline. - Listening: Instructions.	2	1-Advanced lecture. 2-Interactive group discussion.
13	- Reading: A surprise passenger. - Signs and symptoms - Writing: information poster.	2	1-Advanced lecture. 2-Interactive group discussion.
14	(5) Pain: - Vocabulary: Describing pain. - Listening: 1- a pain chart 2- a pain relief. - Language spot: Making comparisons - Reading: Pain:	2	1-Advanced lecture. 2-Interactive group discussion.
15	- Patient care: Questions to assess pain. - Speaking: filling in a pain chart. - Writing: A pain report.	2	1-Advanced lecture. 2-Interactive group discussion.
16	- Language spot: perfect tenses. - Units revisions. practice File - Exercises of the units.	2	1-Advanced lecture. 2-Interactive group discussion.
Total			32

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Learning resources:

References:

1- Course Notes

Handout – English Tenses – T Abdurrahman Al-Aslami.

2- Essential Books (Text Books)

Oxford English for Careers - Nursing (1) – Tony Grice

New Pattern English Grammar and composition- Dr. Raghukul Tilak

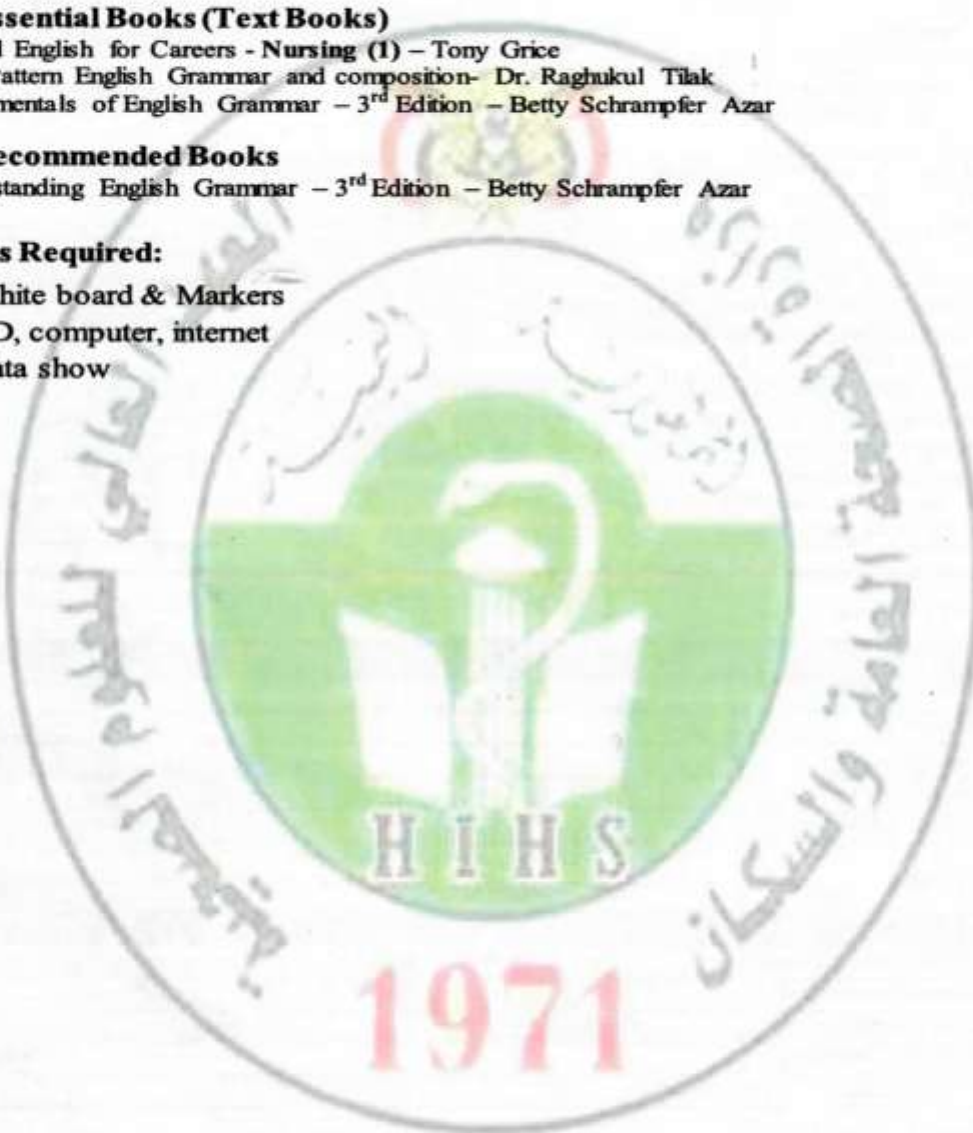
Fundamentals of English Grammar – 3rd Edition – Betty Schramper Azar

3- Recommended Books

Understanding English Grammar – 3rd Edition – Betty Schramper Azar

Facilities Required:

- 1- White board & Markers
- 2- CD, computer, internet
- 3- Data show





مفهد خاص
بالمفهد العالي للعلوم الصحية
صنعاء

Course Specification of
Islamic education
الثقافة الإسلامية

HIHS
1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

أولاً: البيانات الأساسية

إسم المؤسسة التعليمية التي تقدم البرنامج:

المعهد العالي للعلوم الصحية – صنعاء.

القسم الذي يقدم البرنامج:

المختبرات الطبية

إسم المقرر:

الثقافة الإسلامية (Islamic education)

كود المقرر:

HS-LAB-1111

الساعات المعتمدة:

ساعة واحدة معتمدة

ساعة واحدة نظري (16 ساعة فعلية)

السنة الدراسية التي يعطى فيها المقرر:

السنة الأولى – الترم الدراسي الأول.

أعضاء هيئة التدريس المسئولون عن تدريس المقرر:

مختصين في اللغة العربية

اللغة المستخدمة في تدريس المقرر:

اللغة العربية

إسم معد/معدو توصيف المقرر:

أ/ توفيق محمد القدسي



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

ثانياً: البيانات المهنية

أهداف المقرر:

- 1- يستوعب الطالب مبادئ وأسس وقيم الإسلام الحنيف.
- 2- يحلل ويقيم قدرته على فهم واستيعاب أهداف ومفردات المقرر.
- 3- يتعلم الطالب ويدرك أهمية اكتساب معارف ومهارات سلوكيات المهنة الطبية.

مخرجات التعلم المرجوة

أ- المعرفة والفهم:

1. يعرف الطالب حقيقة التوحيد وأنواعه وأهميته وشمولية الإسلام.
2. يدرك أهمية الإخلاص ويعرف حقائق الإيمان واستشعار عظمة الله في تنظيم شئون الحياة.
3. يعرف أهمية العلم وهدى الإسلام في الصحة العامة والقضايا المعاصرة وأخلاقيات وسلوكيات المهنة الطبية.

استراتيجيات التعلم والتعليم المستخدمة لتحقيق المعرفة والفهم:

1. المحاضرة المطورة.
2. المناقشة الجماعية.
3. خارطة المفاهيم.

أساليب التقييم المستخدمة لتقييم المعرفة والفهم:

1. أسئلة صح وخطأ.
2. أسئلة المزاوجة.
3. أسئلة متعددة الخيارات.
4. أسئلة مقالته صغيرة.

ب- المهارات الذهنية

1. يدرك الطالب أهمية أهداف المقرر ومدى تحققها فيه.
2. يحلل أهمية دراسة مفردات المقرر.
3. يدرس أبعاد ما تعلمه وكسبه من معارف ومهارات مهنية في مجال تخصصه.

استراتيجيات التعلم والتعليم المستخدمة لتحقيق المهارات الذهنية:

1. الحوار والنقاش.
2. عمل مجموعات.
3. عصف ذهني.

أساليب التقييم المستخدمة لتقييم المهارات الذهنية:

1. أسئلة نقاش.
2. أسئلة الاختيار من متعدد.

ج- المهارات الانتقالية:

1. لا يوجد

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

محتوى المقرر
المواضيع النظرية:

الوحدة	المحتوى	الساعات	استراتيجية التعليم والتعلم
1	أساسيات في العقيدة الإسلامية: • معنى كلمة التوحيد - شروطها وأثارها. • توحيد الألوهية. • توحيد الربوبية. • توحيد الأسماء والصفات.	1	المحاضرة المطورة
	الإخلاص في العمل: • أهمية الإخلاص في قبول الأعمال. • إخلاص النية لله في كل عمل، وما يقلم به من أعمال تجاه المرضى. • النتائج المترتبة على الإخلاص	1	المحاضرة المطورة
	الإيمان: • مفهوم الإيمان. • حقيقة الإيمان. • الإيمان بالقضاء والقدر	1	المحاضرة المطورة
4	الفهم الشمولي للإسلام: • البعد الإيماني. • البعد الاجتماعي. • البعد التشريعي. • البعد السياسي. • البعد الحضاري.	1	المحاضرة المطورة
	هدى الإسلام في الصحة ورأيه في القضايا المعاصرة • النظافة - التناوب. • الوقاية من الأمراض. • التنفس خارج الإناء • غسل اليدين قبل الأكل وبعد. • تغذية الأكل.	1	المحاضرة المطورة
	• تنظيم النسل. • الإجهاض. • زرع الأعضاء. • نقل الدم. • تشريح جثث الميت.	1	المحاضرة المطورة
6	سلوك المسلم وأخلاقه في المهنة الطبية: • الاهتمام بالدراسة والتفوق. • عدم التعالي والكبر. • الأمانة. • الصدق. • السرية. • حسن المظهر. • إتقان العمل. • القوة الحسنة. • عدم الخلوة بالنساء.	1	المحاضرة المطورة
		1	المحاضرة المطورة
		1	المحاضرة المطورة
		1	المحاضرة المطورة



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظم ثلاث سنوات 2019

الوحدة	المحتوى	الساعات	استراتيجية التعلم والتعليم
	• غط البصر. • مواكبة التقدم العلمي والأبحاث الجديدة. • عدم التعامل مع الأدوية المحرمة.		
7	العلم وبناء الأمم: • فضيلة العلم. • فضيلة التعلم وثوابه. • آداب طالب العلم وحق معلمه عليه. • الإسلام وعلوم الحياة.	1	المحاضرة المطورة
		1	المحاضرة المطورة
	المجموع	16	

تقييم الطلاب:

إجراء اختبارات قصيرة شفوية وتحريزية لتأكد من مدى تحقق الأهداف المعرفية بالإضافة إلى إعطائهم بعض التكاليف بالأسبوع الأخير
أجراء امتحان نهائي لتقسيم مهارتهم لتأكد من مدى تحقق كافة الأهداف.

أساليب التقييم المستخدمة:

1. أسئلة متعددة الخيارات
2. أسئلة مقالته قصيرة
3. أسئلة صح وخطأ
4. أملا الفراغات
5. أسئلة المزاجية

نموذج التقييم*:

الرقم	طرق التقييم	درجة التقييم
1	تعليم تشاركي (حلقات نقاش مع عروض تقديمية)	20
2	امتحان نظري دوري	15
3	امتحان نظري نصفى	25
4	امتحان نظري نهائي	40
	المجموع	100

* يفضل تنفيذ الاختبارات الدورية قبل وبعد الاختبار النصفى وتقسيم الدرجة عليهما.

جدول التقييم:

الرقم	موعد التقييم
1	الأسبوع الرابع
2	الأسبوع السادس
3	الأسبوع الثامن
4	الأسبوع الخامس عشر



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

* يفضل تحديد الاختبارات لجميع المقررات عبر القسم التعليمي وبمواعيد معلنة للطلاب.

مصادر التعلم:

المراجع:

- 1) كتب الإيمان
 - 2) الثقافة الإسلامية
 - 3) السلوك الاجتماعي
 - 4) سلوك المسلم كطبيب
 - 5) العلم وبناء الأمم.
- د. / محمد تميم ياسين
د. / حامد محمود إسماعيل.
د. / حسن أيوب.
د. / وجدي غنيم.
أ.د. / غلب السرجاني.

التسهيلات والإمكانات اللازمة للتعليم والتعلم:

1. قاعة دراسية
2. داتا شو
3. لوح عرض
4. سبورة وأقلام
5. جهاز كمبيوتر





منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

October
2019

Courses Specification

First Year – Second Semester

HIHS

1971



Course Specification of Hematology I Introduction of hematology

HIHS
1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Hematology I (Introduction of hematology)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3Credit Hours

Code Number:

HS-LAB-1212a

Course semester:

1st year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulrazzaq Othman Al-agbare

Date of Specifications approval:





Professional Information

Course aims

This course aim to provides the Laboratory undergraduate student with the knowledge about the Hematology, to help him to understand the importance of hematology in the medicine and how to understand the blood cells formation, developing, proliferation, maturation and function across the human life periods from the fetal life up to adult, to know the types of blood cells and their production requirement, Hemoglobin synthesis and the peripheral blood cells morphology and function, the anticoagulant material which used in the daily laboratory work and the content of the routine test of blood cells (CBC)

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Explain the process of hematopoiesis, regulation of the blood cells production, and mention the parts of the primary and the secondary hematopoietic organs
- a.2. Know the importance of blood collection, cells components of the complete blood count (CBC) and their normal values and methods

Strategies of Teaching And Learning:

1. Advance Lecture.
2. Presentation

Assessment & Evaluation Methods:

1. Short Essay.
2. Multiple chooses Questions.
3. Complete the blanks.

B. Intellectual skills

- b.1. Describe the maturation steps of each type of blood cells
- b.2. Numerate the types of hemoglobin in each age
- b.3. Describe the CBC methods manual and electronic and remark the advantage and disadvantage each method

Strategies of Teaching And Learning:

1. Interactive group discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

At the end of this Course the student will be able to

- c.1. Perform blood collection for CBC, blood cells counting, staining blood film and Identify different types of normal cells under microscope
- c.2. Prepare and uses of anticoagulant materials microscope



Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam

D. Transferable skills

- d.1. Organize and set-up a laboratory of health establishment.
- d.2. Keeps proper way of records and Prepare monthly and annual report writing.
- d.3. Read and write scientific reports and present them to others in group discussion and Work in group team.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعها

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction of hematology: Introduction of hematology blood physiology- blood circulatory system	1	Advance lecture
2	Hematopoiesis and hematopoietic organs: Hematopoiesis -Hematopoiesis in fetus Hematopoietic Organs 1-Primary hematopoietic organ 2-The secondary hematopoietic organ (Reticulendothelial System -RES)	1	Advance lecture
3	Hematopoiesis - & Regulation of hematopoiesis: Types of hemopoiesis in adult Blood cells production Properties of stem cell Progenitor cells- Regulation of hematopoiesis	1	Advance lecture
4	Erythropoiesis: Erythrocytes maturation Erythrocytes Maturation Stages (Erythropoiesis) Reticulocytes: Definition: Content, Period of life:	1	Advance lecture
5	Leukopoiesis and thrombopoiesis: Leukopoiesis and thrombopoiesis	2	Advance lecture



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No.	Subject	Contact hours	Learning & teaching strategies
	Granulopoiesis The maturation stages of the neutrophil The maturation of the Eosinophil, Basophil, and Monocyte Thrombocytes Production (Thrombopoiesis) The non-Granular cells (Lymphoid Group)		
6	Hemoglobin Structure & Function: Hemoglobin Structure Polypeptide chains of the Hb The main hemoglobin in Embryonic Life- fetal life- Newborn – Adult	1	Advance lecture
7	Mid exam	1	
8	Energy Requirements & Iron metabolism: Energy Metabolism Of red blood cells Importance of iron The forms of iron in the body Daily intake, Iron storage Iron recycled Proteins participate in iron metabolism Total body's iron.	1	Advance lecture
9	Vitamin B ₁₂ & Folate Metabolism: Vitamin B ₁₂ Sources: Importance, absorption: Daily requirement, Storage site. Folate: Sources: Importance, absorption: Daily requirement, Storage site.	1	Advance lecture
10	Anticoagulant and blood composition Anticoagulant materials in the Lab Definition, Types, Mechanism Anticoagulant in vivo, Blood composition, Cells (RBC, WBC and PLT), Plasma -Serum	1	Advance lecture
11	Peripheral blood cells properties: Peripheral blood cells 1-Erythrocytes Properties 2-Granular cells properties Neutrophils properties, Eosinophil properties, Basophil properties Non-granular cells (Lymphoid cells) Normal percentages of the WBC in the peripheral blood and bone marrow	2	Advance lecture
12	FBC evaluation and methods: Full blood count (FBC) or complete blood count (CBC) Names: CBC evaluation information, that can get from the CBC test Parts of The FBC or the CBC RBC-Indices or RBC electronic indices RBC Parameters 1-Manual method properties 2-Automatoid method properties Packed cell volume (PCV). Or hematocrit (Hct)	2	Advance lecture



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No.	Subject	Contact hours	Learning & teaching strategies
	Normal Hct Values: %		
13	Cells study on the FBC: Reticulocytes count test or Retics test Methods and importance White blood cells study on FBC include Absolute count and relative count and their Importance, Platelets or thrombocytes on FBC	1	Advance lecture
Total		16	

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Blood cells production: Morphology of the RBC maturation (photo)	8	Practical Lab
2	Anticoagulant materials- plasma- serum	4	Practical Lab
3	Hematology instrumentation: Count Chamber, slides, Microscope, pipettes, spectrophotometer etc.	8	Practical Lab
4	Hematology stains -Preparation uses	8	Practical Lab
5	Hematology reagents: Drabkin, Turk solution, methylene crystal blue Preparation, uses	4	Practical Lab
6	White blood cells: Types morphology (photo) Microscopic observation of blood cells and recognition	8	Practical Lab
7	platelets: morphology (photo, slides)	4	Practical Lab
8	Blood collection, Blood collection form different ages (infant, child, adult), Venous blood collection--Instruments & Materials (containers, anticoagulant, alcohol, etc.) • Evacuated collection systems • Patient's data registration • Capillary blood collection -Principle -Instruments &Materials, capillaries, microtainers, lancet for whom capillary blood is collected-Procedures Quality control:	8	Practical Lab
9	uses and preparation of anticoagulant	4	Practical Lab
10	Blood film preparation	8	Practical Lab
Total		64	



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Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

- 1- Baker, FJ, Silverton RE. Introduction to Medical Laboratory Technology. 6th Edition. Butterworths and Co. 1985.
- 2- Chees brough M. District Laboratory Practice in Tropical Counties. Part 2. Cambridge University Press. 2000.
- 3- Fischbach F. A Manual of Laboratory and Diagnostic Tests. 4th Edition J.B. Lippincott Co. 1992.
- 4- Hall, Roger and Malia, Robert G. Medical Laboratory Hematology. Butterworths and Co. 1984.
- 5- Hayhoe, F.G.J. and Flemans R.J. A Color Atlas of Hematological Cytology. 3rd Edition Wolfe Publishing Ltd. 1992.
- 6- Henry JB. Clinical Diagnosis and Management by Laboratory Methods. 20th Edition. W.B. Saunders
- 7- Hoffbrand, AV, Pettit JE. Essential Hematology. 3rd Edition. Blackwell Science. 1993.
- 8- Koepke, John A. Laboratory Hematology. Churchill Livingstone. 1984.
- 9- Lewis SM, Bain BJ, Bates I. Dacie and Lewis Practical Hematology. 9th Edition. Churchill Livingstone 2002.
- 10- Linne JJ, Ringsrud KM. Clinical Laboratory Sciences. The Basics and Routine Techniques. 4th edition. Mosby, Inc. 1999.
- 11- Luzzatto, Lucio (Editor). Clinics in Hematology: Hematology in Tropical Areas. Volume 10 Number 3 W.B. Saunders Co. Ltd. 1981.
- 12- Raphael, Stanley S. Lynch's Medical Laboratory Technology. 4th Edition Igaku-Shoin/Saunders International Edition. 1983.
- 13- Ringsrud KM, Linne JJ. Urinalysis and Body Fluids. Mosby, Inc. 1995.
- 14- Robinson, SH, Reich PR. Hematology: Pathophysiologic Basis for Clinical Practice. 3rd Edition. Little, Brown and Company. 1993.
- 15- WHO Manual of Basic Techniques for a Health Laboratory. 1981



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16- Wintrobe, Maxwell M. Clinical Hematology. 8th Edition. Lea and Febiger Philadelphia 1981.

Facilities Required:

- White board, computer, internet
- Data show
- Overhead projector-Hand notes
- Lab (materials, glass wares, balances, etc....)
 - Microscope –slides and cover slides- spectrophotometer
 - Capillary tube –count chamber- syringes
 - Giemsa stain – Drabkin – turk solution – methylene crystal blue- Dettol





Course Specification of Systemic Bacteriology I (Gram Positive bacteria)

H I H S

1971



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Systemic bacteriology I (Gram Positive bacteria)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-124b

Course semester:

1st year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Fatema Al- Wathaf

Date of Specifications approval:





Professional Information

Course aims:

This course provides knowledge on the Gram-positive bacteria and diseases which are caused by these species. It also provides skills for specimen collection, transport and laboratory isolation and identification of those bacterial infections.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Explain the characteristics, structure and classification of Gram positive bacteria.
- a.2. Identify the pathogenesis and laboratory diagnosis of Gram positive bacteria.

Strategies of Teaching And Learning:

1. Advance Lecture.
2. Oral presentation

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Formulate schemes for laboratory diagnosis of Gram positive bacteria.
- b.2. Select the appropriate identification requirements for each organism in Gram positive bacteria.

Strategies of Teaching And Learning:

1. Interactive group discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

At the end of this Course the student will be able to

- c.1. Appropriately prepares media and biochemical tests that required for Gram positive identification.
- c.2. Perform inoculation of specimens, isolation and identification of Gram positive bacteria.

Strategies of Teaching And Learning:

2. Practical Lab

Assessment & Evaluation Methods:

2. Practical exam

D. Transferable skills

- d.1. Communicate effectively by written and oral means.
- d.2. Manage time effectively.



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Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Staphylococcus aureus 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. Antibiotics Susceptibility pattern 5. treatment and prevention	2	Advance lecture
2	Coagulase negative Staphylococci 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention	1	Advance lecture
3	Streptococcus pyogen 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention 5. other β hemolytic streptococci	1	Advance lecture
4	Streptococcus pneumoniae 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention 5. viridians group streptococci	1	Advance lecture
5	Enterococci 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention	1	Interactive group discussion.
6	Bacillus anthracis and Bacillus cereus 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention	1	Advance lecture
7	Clostridium tetani and Clostridium botulinum 1. Properties, structure and classification	1	Advance lecture



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No.	Subject	Contact hours	Learning & teaching strategies
	2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention		
8	Clostridium perfringens and Clostridium difficile 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention	1	Interactive group discussion.
9	Corynebacterium diphtheriae 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention	1	Advance lecture
10	Listeria monocytogenes 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention Erysipelothrix rhusiopathiae	1	Advance lecture
11	Mycobacterium tuberculosis 1. Properties, structure and classification 2. Pathogenesis and epidemiology 3. laboratory diagnosis 4. treatment and prevention	2	Advance lecture
12	Mycobacterium leprae 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention	1	Interactive group discussion
13	Actinomyces species 1. Properties, structure and classification 2. pathogenesis 3. laboratory diagnosis 4. treatment and prevention	1	Oral presentation
14	Nocardia species 1. Properties, structure and classification 2. Pathogenesis 3. Laboratory diagnosis and treatment Streptomyces species	1	Oral presentation
Total			16



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2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Introductions to Laboratory isolation and identification of Gram positive cocci	4	Practical Lab
2	Laboratory isolation and identification of Staphylococcus aureus	4	Practical Lab
3	Laboratory isolation and identification of Coagulase negative Staphylococci	4	Practical Lab
4	Laboratory isolation and identification of Streptococcus pyogen	4	Practical Lab
5	Laboratory isolation and identification of Streptococcus pneumonia	4	Practical Lab
6	Laboratory isolation and identification of Enterococci	4	Practical Lab
7	Laboratory isolation and identification of Bacillus anthracis and Bacillus cereus	4	Practical Lab
8	Laboratory isolation and identification of Clostridium tetani and Clostridium botulinum	4	Practical Lab
9	Midterm exam	4	Practical Lab
10	Laboratory isolation and identification of Clostridium perfringens and Clostridium difficile	4	Practical Lab
11	Laboratory isolation and identification of Corynebacterium diphtheriae	4	Practical Lab
12	Laboratory isolation and identification of Listeria monocytogenes	4	Practical Lab
13	Laboratory isolation and identification of Mycobacterium tuberculosis	4	Practical Lab
14	Laboratory isolation and identification of Mycobacterium leprae	4	Practical Lab
15	Laboratory isolation and identification of Actinomyces israelii and Nocardia asteroides	4	Practical Lab
16	Practical review of Gram positive	4	Practical Lab
Total		64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%



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Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Monica Chees brough, District Laboratory practice in tropical countries. Second edition part 2.
2. Stephen H. Gillespie, Peter M. Hawkey, principles and practice of clinical Bacteriology.
3. Harley Prescott, Laboratory exercise in microbiology.

2- Recommended Books

Websites:

www.Cambridge.org/9780521676311.

Facilities Required:

- White board, computer, internet, Data show, Hand notes
- Microbiology Lab:
 1. Microscope- Incubator- Autoclave-Safety cabinet- Centrifuge- Bunsen burner, wire and plastic loop- Refrigerator - Candle jar- Glasses
 2. Stains.
 3. Bacteriological media (Nutrient agar, Nutrient broth, Blood agar, MacConkey agar, Muller hinton agar).
 4. Biochemical tests media and reagents (Catalase reagent, DNA-ase agar, Novobiocin disc, Bacitracin Disc, Optochin disc, Bile solubility reagent, Asculin medium).
 5. Antibiotics discs.



Course Specification of Parasitology I (Protozoa)



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Parasitology I (Protozoa)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

4 Credit Hours

Code Number:

HS-LAB-1213a

Course semester:

1st year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Tariq Al Hidabi

Date of Specifications approval:



Professional Information

Course aims

This Course is designed to provides the student with knowledge and skills on protozoa to enable the student of identification the morphology characters, pathogenesis (mode of transmission, life cycle, and clinical manifestations), laboratory diagnosis, prevention, and control of protozoa.

Intended learning outcomes (ILOs):

A. Knowledge & Understanding

- a.1. define the terms that related to parasitology, protozoan parasites, And their hosts.
- a.2. Mention the general characters of protozoa.
- a.3. Classify the protozoa.
- a.4. Discuss the pathogenesis of protozoa.

Strategies of Teaching And Learning:

1. Advance Lecture.
2. Oral presentation

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Predict the relationship between parasite and host.
- b.2. Compare between diagnostic stages of protozoa.
- b.3. Predict the prevention & control methods of protozoa.

Strategies of Teaching And Learning:

1. Interactive group discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Identify the diagnostic stages of protozoa microscopically.

Strategies of Teaching And Learning:

1. Practical Lab.

Assessment & Evaluation Methods:

1. Practical Exam.





D. Transferable skills

d.1. Conduct the group work reliability.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction to parasitology Definition of parasitology, parasite, and host. Types of parasite and host. Parasite-host relationship.	2	Advanced lecture
2	Protozoa Definition of protozoa. General characters. Classification.	2	Advanced lecture and Interactive Group discussion
3	Rhizopoda (Amoeba): Entamoeba histolytica Definition. Morphology characters. Pathogenesis. Prevention and control. Entamoeba coli & Iodamoeba butschlii Morphology characters.	2	Advanced lecture and Interactive Group discussion Presentation
4	Giardia lamblia Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture and Interactive Group discussion Presentation
5	Trichomonas vaginalis & Trichomonas hominis Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture and Interactive Group discussion Presentation
6	Leishmania donovani Leishmania tropica Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture and Interactive Group discussion



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No.	Subject	Contact hours	Learning & teaching strategies
7	African Trypanosoma & American Trypanosoma Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture and Interactive Group discussion
8	Mid exam	2	
9	Malaria parasites (Plasmodium) Definition. Types. Morphology characters.	4	Advanced lecture and Interactive Group discussion
10	Malaria parasites (Plasmodium) Pathogenesis (mode of transmission, life cycle, clinical manifestations), and Prevention and control.	4	Advanced lecture and Interactive Group discussion
11	Toxoplasma gondii Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture and Interactive Group discussion
12	Balantidium coli Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture and Interactive Group discussion
13	Balantidium coli Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture and Interactive Group discussion
Total			32

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Entamoeba histolytica Identification of the cyst microscopy. Identification of the trophozoite forms microscopy.	4	Practical Lab.
2	Entamoeba coli & Iodamoeba butschlii Identification of the cyst microscopy. Identification of the trophozoite forms microscopy.	8	Practical Lab.
3	Giardia lamblia Identification of the cyst microscopy. Identification of the trophozoite forms microscopy.	4	Practical Lab.
4	Trichomonas vaginalis & Trichomonas hominis	4	Practical Lab.



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N.	Subject	Contact hours	Lab. Hospital, field
	Identification of the trophozoite forms microscopy.		
5	Leishmania donovani Identification of the Amastigote forms microscopy.	4	Practical Lab.
6	Leishmania tropica Identification of the Amastigote forms microscopy.	4	Practical Lab.
7	African Trypanosoma & American Trypanosoma Identification of the Trypomastigote forms microscopy. Identification of the Amastigote forms microscopy.	8	Practical Lab.
8	Malaria parasites (P. falciparum) Identification of the Ring, Trophozoite, Schizont, and Gametocyte forms microscopy.	8	Practical Lab.
9	Malaria parasites (P. vivax) Identification of the Ring, Trophozoite, Schizont, and Gametocyte forms microscopy.	8	Practical Lab.
10	Malaria parasites (P. malariae) Identification of the Ring, Trophozoite, Schizont, and Gametocyte forms microscopy.	4	Practical Lab.
11	Malaria parasites (P. ovale) Identification of the Ring, Trophozoite, Schizont, and Gametocyte forms microscopy.	4	Practical Lab.
12	Balantidium coli Identification of the cyst microscopy. Identification of the trophozoite forms microscopy.	4	Practical Lab.
Total		64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%



Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

- 1- Chees brough Monica, 2005, District Laboratory Practice in Tropical Countries, Part 1, Cambridge University Press.
- 2- Peters Wallace & Pasvol Geoffrey, 2007, Atlas of Tropical Medicine and Parasitology, Sixth edition, Elsevier Mosby.

Facilities Required:

Instruments:

- Data show.
- Overhead projector.
- Microscopes.

Solutions:

- Formalin solution 10%
- Lugol's iodine solution.
- Normal saline solution 0.9%

Materials:

- White board.
- Markers.
- Paper of overhead projector (translucent Papers)
- Microscopes slides & cover slides.
- Demonstrative slides of protozoa diagnostic stages.

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

University Institute for Medical Health
Quality Assurance Department



المعهد العالي للعلوم الصحية
قسم فنى المختبرات الطبية

معهد الجامعة للعلوم الطبية
إدارة ضمان الجودة



المعهد العالى للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Course Specification of Clinical Chemistry I

H I H S



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Clinical Chemistry I

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-122b

Course semester:

1st year - 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Amah Al rahem Almashraqi

Date of Specifications approval:

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء





Professional Information

Course aims

This course covers the mechanisms of pathophysiological conditions, the clinical significance and methods of analysis for biochemical parameters including blood glucose, lipid, lipoprotein glycoprotein and uric acid.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Describe the types measurement of blood glucose by fasting, post prandial, random blood glucose, oral glucose tolerance, glycosylated haemoglobin (HbA1C).
- a.2. Describe the regulation of blood glucose by insulin and glucagon hormones.
- a.3. Describe various diseases of the glomerulus's and tubules and how laboratory tests are used in these disorders.

Strategies of Teaching And Learning:

1. Advance Lecture.
2. Oral presentation

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Formulate scheme of metabolites according the diseases
- b.2. Predict sources of errors in measurement of these metabolites.

Strategies of Teaching And Learning:

1. Interactive group discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Perform the laboratory tests for measurement of blood glucose, blood lipids and plasma proteins.
- c.2. perform the calibration and control of the above tests.

Strategies of Teaching And Learning:

1. Practical lab

Assessment & Evaluation Methods:

1. Practical exam.



D. Transferable skills

d.1. Communicate effectively by written and oral means

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation



Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction to metabolism: 1- Blood glucose. 2- Hormonal regulation of plasma glucose.	1	Advanced lecture, Interactive group discussion and written assignment
2	Diabetes mellitus: 1- Insulin dependent diabetes mellitus. 2- Non-insulin dependent diabetes mellitus. 3- Gestational diabetes mellitus.	1	Advanced lecture, Interactive group discussion and written assignment
3	Methods diagnosis of diabetes mellitus: 1- Fasting blood sugar. 2- Post-prandial blood sugar. 3- Random blood glucose. 4- Oral glucose tolerance. 5- Glycosylated haemoglobin (HbA1C).	2	Advanced lecture, Interactive group discussion and written assignment
4	Introduction to lipids and lipoproteins: 1- Cholesterol. 2- Triglycerides. 3- Low-density lipoproteins. 4- High density lipoproteins. 5- Very low density lipoprotein.	1	Advanced lecture, Interactive group discussion and written assignment
5	Cholesterol, TG, Chylomicron, LDL, HDL, VLDL: 1- Definition. 2- Description. 3- Clinical significant. 4- Interpretation and Indication.	3	Advanced lecture, Interactive group discussion and written assignment
6	Classification of electrophoresis Plasma proteins: 1- Albumin. 2- alpha 1 globulin. 3- alpha 2 globulin. 4- beta globulin. 5- gamma globulin.	1	Advanced lecture, Interactive group discussion and written assignment
7	Albumin and total protein: 1- Definition. 2- Description. 3- Clinical significant.	1	Advanced lecture, Interactive group discussion and written assignment



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No.	Subject	Contact hours	Learning & teaching strategies
	4- Interpretation and indication.		
8	Globulins (Alpha-fetoprotein and alpha-antitrypsin, ceruloplasmin, Ferritin and transferrin): 1- Definition. 2- Description. 3- Clinical significant. 4- Interpretation and indication.	2	Advanced lecture, Interactive group discussion and written assignment
9	Renal function: 1- Renal blood flow. 2- Glomerular filtration rate. 3- Reabsorption. 4- Excretion.	1	Advanced lecture, Interactive group discussion and written assignment
10	Creatinine and creatinine clearance. Urea and blood urea nitrogen. Uric acid: 1- Definition. 2- Description. 3- Clinical significant. 4- Interpretation and Indication.	3	Advanced lecture, Interactive group discussion and written assignment
Total			16

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Introduction to clinical biochemistry laboratory and safety measures.	4	Practical Lab.
2	Spectrophotometry.	4	Practical Lab
3	Estimation of Fasting and postprandial blood sugar.	4	Practical Lab
4	Estimation of Glucose tolerance test (GTT)	4	Practical Lab
5	Estimation of glycated hemoglobin HbA1c.	4	Practical Lab
6	Estimation of serum triglycerides.	4	Practical Lab
7	Estimation of serum cholesterol Total	4	Practical Lab
8	Estimation of serum cholesterol LDL	4	Practical Lab
9	Estimation of serum cholesterol HDL	4	Practical Lab
10	Estimation of serum albumin	4	Practical Lab
11	Estimation of total proteins.	4	Practical Lab
12	Estimation of serum uric acid.	4	Practical Lab
13	Estimation of blood urea	4	Practical Lab
14	Estimation of creatinine	4	Practical Lab
15	Estimation of creatinine clearance.	4	Practical Lab
Total		64	



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Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

- 1- Clinical chemistry, Principles, procedures and correlations, 5th edition, 2005, by Bishop, fody and choeff. Lipincott Williams &Wilkins.
- 2- Teitz Fundamentals of clinical chemistry, 5th edition, 2001, by Burtis & Ashwood. Saunders Harcourt, India.

Facilities Required:

- White board
- Markers
- Data show
- Overhead projector
- lab content
 - o Spectrophotometer
 - o Micropipette
 - o Water path
 - o Reagents kits:
 - o Glucose
 - o Glycated hemoglobin (HbA1C).
 - o Urea
 - o Creatinine
 - o Uric acid
 - o T-cholesterol
 - o triglycerides
 - o Low density lipoproteins.
 - o High density lipoproteins.
 - o Albumin
 - o Total proteins





Course Specification of Basic Immunology

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Basic Information

Course title:

Basic Immunology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

4 Credit Hours

Code Number:

HS-LAB-1214a

Course semester:

1st year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Helal Ail

Date of Specifications approval:





Professional Information

Course aims

At the end of this course the student should be able to:

Explain the role of natural and acquired immunity against infections, identify the adverse of immunological reaction and immune deficiency, describe the principles of serological reaction and perform the several of serological tests, also help the students to explain the principles of Blood grouping and Tissue typing.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Explain the natural and acquired immunity
- a.2. Explain the steps of phagocytosis.
- a.3. Describe the complement system and explain the mechanisms of activation.
- a.4. Enumerate the cells, tissue of the immune system, and explain the Major of histocompatibility and immune response.
- a.5. Describe the antigen, antibody and enumerate the several classes of antigens and immunoglobulins.
- a.6. Explain the mechanisms of cell mediated immunity and enumerate the biological properties.
- a.7. Explain the different methods and principles of (Agglutination, Precipitation and lysis).

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Differentiate between cells and Tissue of immune system
- b.2. Create scheme for antibody structure and steps of production, complement activation and step of phagocytosis.
- b.3. Select the best serological assay according to Agglutination and Precipitation.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation



C. Professional & Practical skills

- c.1. Perform the haemagglutination assay.
- c.2. Perform the various serological assays (Agglutination, precipitation, immunochromatography).
- c.3. Perform the serial dilution.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam

D. Transferable skills

- d.1. Communicate effectively by written and oral means

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

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Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction Definition Important Discoveries	2	Advanced Lecture
2	Natural or innate immunity Definition Types Mechanisms Phagocytosis and Natural killer cells Definition Types Mechanisms Complement system Definition Metabolism Activation Control	4	Advanced Lecture presentation (data show) Interactive group discussion



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No.	Subject	Contact hours	Learning & teaching strategies
	Biological effects		
3	Acquired or adaptive immunity Definition Types Mechanisms Differentiation Properties	2	Advanced Lecture
4	Tissue and Cells of the Immune system. Primary lymphoid Tissue Secondary lymphoid Tissue Precursor cells Stem cells T. & B. Lymphocyte Definition Derivation Properties Functional	4	Advanced Lecture presentation (data show)
5	Antigens (immunogens). Definition Determinants (epitopes) Factors governing of antigenicity Types Hapten Heterophil.	2	Advanced Lecture Presentation (data show)
6	Immunohematology and Tissue typing. (HLA). Blood groups Principles of blood groups Tissue typing Definition Types Function Principles of tissue typing. Recognition of antigen (Antigen presenting cells "APC").	4	Advanced Lecture Create scheme Interactive group discussion
7	Serology Definition Principles Titration Rising titer Miscellaneous Agglutination Assay Widal test lab Definition Principle Sample Qualitative and Semi-Quantitative Result Interpretation of result	4	Advanced Lecture Presentation (data show)



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No.	Subject	Contact hours	Learning & teaching strategies
8	RPR, VDRL, ASO, RF, CRP, Pregnancy, Toxoplasma, Paul-Bunnell test, Brucella and helicobacter. Definition Principle Sample Qualitative and Semi-Quantitative Results Interpretation of result.	4	Advanced Lecture Presentation (data show)
9	Precipitation test Definition Principle Sample Types Procedure Results Interpretation of result.	2	Advanced Lecture Presentation (data show)
10	ELISA test Definition Principle Sample Types Procedure Results Interpretation of result. Detection of HBsAg, HIVβ-hcG, Toxoplasma (IgG, IgM)	2	Presentation (data show) Create scheme
Total		32	

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Immunohematology and Tissue typing. (HLA). Blood groups Principles of blood groups	4	Practical Lab.
2	Detection of typhoid fever by widal test: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	8	Practical Lab.



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N.	Subject	Contact hours	Lab. Hospital, field
3	Detection of rheumatoid fever: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results. Detection of Anti-streptolysin O: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	8	Practical Lab.
4	Detection of C-reactive protein: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	8	Practical Lab.
5	Detection of syphilis: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	8	Practical Lab.
6	Screening test for brucella antibodies: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
7	Detection of HCG hormone: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
8	Detection of Helicobacter pylori: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
9	Detection of Toxoplasma:		Practical Lab.



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N.	Subject	Contact hours	Lab. Hospital, field
	1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	8	
10	Detection of hepatitis: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
11	Detection of HIV: 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
	Total	64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Course Notes; Introduction to Immunology-2012
2. Essential Immunology-2010
3. Laboratory Manual for Tropical Countries-2009.





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4. Periodical, Web Site ...etc

- White board
- Markers
- Data show
- Overhead projector

Lab requirement:

ELISA - Radioimmunoassay

widal test

Anti-streptolysin O- C-reactive protein- syphilis-

heliobacterpyloris, Toxoplasma, hepatitis, HIV





Course Specification of English Language II

HIHS
1971



Basic Information

Course title:

English Language II

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-1210b

Course semester:

1st year – 2nd Semester

Course teaching staff:

English teacher

Language used:

English languages

Course coordinator:

T. Abdulrahman Al Aslami

Date of Specifications approval:



Professional Information

Course aims

This Course focuses on the use of writing activities for medical paragraphs using medical terms and providing a knowledge base for Laboratory students in medical English. Also, it aims to equip the students with knowledge and skills about English language to practice it in real work situations

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Define the medical terms related to course reading passages.
- a.2. Describing what people in hospital do and what different hospital departments do.
- a.3. Understand the grammatical structure in context step by step approach to writing
- a.4. learns the right vocabulary for speaking to patients and colleagues.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Analyze and write the meanings of terms.
- b.2. Formulate short paragraph and sentences.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Perform the pronunciation correctly and grammar through reading.
- c.2. Identify corrects spelling of various terms and parts of terms.
- c.3. Recognize types of writing paragraph.

Strategies of Teaching And Learning:

- 1- Demonstration
- 2- USING Audio CD

Assessment & Evaluation Methods:

1. Direct observation
2. Short paragraph & Qs



D. Transferable skills

d.1. Read the paragraphs fluently and Write a summary of a patient.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	(1) Symptoms: - Listening: 1- Symptoms 2- A helping call - Language spot: Question forms. - Signs and symptoms	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment.
2	- Speaking: Asking questions on a helpline. - Writing: Symptoms report	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
3	- Reading: Mystery syndromes. - BODY BITS: Tongue diagnosis.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
4	(2) Blood: - Vocabulary: Testing Blood. - Listening: Blood types. - Writing: Describing blood cells .	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment.
5	- Speaking: Blood in history. – Making difficult decision. - Language spot: Zero and first conditional - Reading: Blood pattern analysis - The heart.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
6	(3) Monitoring the patient: - Pronunciation: Talking readings. - Vocabulary: describing readings - Listening: A coma patient – A scan.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
7	- Speaking: Patient care: Taking vital signs - Anesthetics procedures - Language spot: The passive.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment.
8	- Reading: General anesthetics: - Writing: Describing a procedure.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
9	(4) Medication: - Vocabulary: Types and forms of medication.	2	1-Advanced lecture. 2-Group discussion.



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No.	Subject	Contact hours	Learning & teaching strategies
	- Listening: Patient medication.		3-Written assignment.
10	- Speaking: patient medication. - Language spot: Be going to v present continuous for future.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
11	- Reading: Pandemics and Tamiflu. - Types and forms of medication - Writing: writing up an experiment	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
12	(5) Alternative treatments: - Vocabulary: Types of therapy. - Reading: Wild treatments.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
13	- Listening: Qigong. - Language spot: Giving reasons. - Speaking: Two healers.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
14	- Conventional medicine and homeopathy. - Writing: Advice to a friend via email.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
15	(6) Laboratory tests: - A MICROBIOLOGY REQUEST FORM. - A Biochemistry and haematology lab report - Terms used to describe lab Result. - Exercises.	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment.
16	(7) The Urinary system: . - Urinary symptoms. - Urinalysis. - Exercises	2	1-Advanced lecture. 2-Group discussion. 3-Written assignment
	TOTAL	32	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Diploma of Medical Laboratories three years

منهج خاص
بالمعهد العالي للعلوم الصحية
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Learning resources:

References:

- 1- Course Notes
- 2- Essential Books (Text Books) Professional English in use – Medicine – Eric H. Glendinning Ron Howard Oxford English for Careers - Nursing (1) – Tony Grice New Pattern English Grammar and composition- Dr. Raghukul Tilak Fundamentals of English Grammar – 3rd Edition – Betty Schramper Azar
- 3- Recommended Books

Understanding English Grammar – 3rd Edition – Betty Schramper Azar

Facilities Required:

- 1- White board & Markers
- 2- CD, computer, internet
- 3- Data show





منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

October
2019

Courses Specification

Second Year – First Semester

HIHS
1971



Course Specification of Hematology II (Anaemia)

HIHS
1971



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Hematology II (Anaemia)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-2112b

Course semester:

2nd year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulrazzaq Othman Al-agbare

Date of Specifications approval:





Professional Information

Course aims

This course aim to provides the Laboratory undergraduate student with the knowledge about the RBC disorders to help him to understand the importance of evaluation and diagnosis of anemia types, in the medicine and how to understand and work to provides available information for the physician

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Mention classification, causes and predisposing factors of anemia
- a.2. Describe the morphological RBC changes in each anemia

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Discuss the causes and types of anemia.
- b.2. Remember the normal values of the CBC components and identify.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

At the end of this Course the student will be able to

- c.1. Perform CBC tests manually and on automated machine
- c.2. Prepare different types of blood film and Bone marrow slides for specialist
- c.3. Write meaningful blood report with correct units and normal value.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam



D. Transferable skills

- d.1. Organize and set-up a laboratory of health establishment.
- d.2. Keeps proper way of records and Prepare monthly and annual report writing
- d.3. Read and write scientific reports and present them to others in group discussion and Work in group team

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.



Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction of Anemia: Definition-symptoms-classification-RBC parameters – RBC morphology changes	1	Advance lecture
2	Erythrocytes disorders- Microcytic anemia: Iron deficiency anemia Definition-types-causes-symptoms- Lab diagnosis -Blood film- CBC result – chemistry	1	Advance lecture
3	Normocytic anemia: Definition-types-causes-symptoms- Lab diagnosis -Blood film- CBC result – chemistry 1-Anemia of chronic diseases 2-Sideroblastic anemia (SA)	2	Advance lecture
4	Normocytic anemia: Definition-types-causes-symptoms- Lab diagnosis -Blood film- CBC result – chemistry 3-Aplastic anemia (AA) 4-Parasites that cause anemia 5-anemia of pregnancy	1	Advance lecture
5	Macrocytic Anemia: 1-Megaloblastic anemia (B ₁₂ and Folate) 2-Pernicious Anemia Characteristic of Macrocytic Anemia and Pernicious Anemia causes-symptoms- Lab diagnosis -Blood film- CBC result – chemistry	1	Advance lecture
6	Hemolytic anemia: Introduction Definition- proteins remove the toxic iron Plasma Hemoglobin Laboratory Documentations of Hemolysis Classification	1	
7	Midterm Exam	1	Advance lecture



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No.	Subject	Contact hours	Learning & teaching strategies
8	Hemoglobinopathies (1- 1 Quantitative Hb-pathies: Thalassemia –definition- Cause of thalassemia –classification- 1-Alpha (a) Thalassemia- types – a-HbH disease symptoms- Lab diagnosis -Blood film- CBC result – chemistry b-Hb-Bart's (Hydrops fetalis)	1	Advance lecture
9	Hemoglobinopathies (1-2 Quantitative Hb-pathies): 2β-Thalassemia syndromes Types of β-Thalassemia syndromes a-β- Thalassemia major (Cooley's Anemia) symptoms- Lab diagnosis -Blood film- CBC result – chemistry b-β-Thalassemia trait (Minor) symptoms- Lab diagnosis -Blood film- CBC result – chemistry	1	Advance lecture
10	Hemoglobinopathies (2-1 Qualitative Hb-pathies): Sickle cell anemia's Syndromes Introduction -Types of sickle cell anemias a- Sickle cell disease (HbSS) Mechanism- symptoms- Lab diagnosis -Blood film- CBC result – chemistry b-Sickle cell trait (HbAS) Mechanism- symptoms- Lab diagnosis -Blood film- CBC result – chemistry	1	Advance lecture
11	Hemoglobinopathies (2-2 Qualitative Hb-pathies): Hemoglobin C disease: Introduction- Mechanism- Types- a-HbCC: symptoms- Lab diagnosis -Blood film- CBC result – chemistry b-HbCA: symptoms- Lab diagnosis -Blood film- CBC result – chemistry Hemoglobin E: Introduction- Mechanism- Types- a-HbEE: symptoms- Lab diagnosis -Blood film- CBC result – chemistry b-HbEA: symptoms- Lab diagnosis -Blood film- CBC result – chemistry Hemoglobinopathies combinations	1	Advance lecture
12	Metabolic disorders of RBC and Red Cell Membrane Disorders: Hemolytic anemia due to 1-G-6-PD deficiency: About G6PD importance -Causes of G6PD deficiency Mechanism: Types of G6PD deficiency: symptoms- Lab diagnosis -Blood film- CBC result – chemistry 2-Red Cell Membrane Disorders -Introduction types a-H. spherocytosis – Mechanism symptoms- Lab diagnosis -Blood film- CBC result – chemistry b- Hereditary Elliptocytosis (HE) Mechanism symptoms- Lab diagnosis -Blood film- CBC result – chemistry	2	Advance lecture
13	CBC: Interpretation and evaluation	1	Advance lecture



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No.	Subject	Contact hours	Learning & teaching strategies
14	General revision	1	Advance lecture
	Total	16	

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	The CBC form (data content) - Registering data importance - Parts of CBC cells - RBC test, Hb, PCV, MCV, MCH, MCHC, RDW, what means, its importance - WBC and platelets tests - Why we write the report - What means routine test in the CBC and specific test - The specific tests, ESR, Blood group, PT, PTT, MPS, etc. - Methods of CBC manual and by blood cells analyzer, advantages and disadvantages of each one - Blood cells analyzer principle, which cells direct measured and which cells calculated • Blood cells analyzer and quality control	8	Practical Lab
2	Estimation of the haemoglobin concentration Sahli Haemocytometer - Principles - Procedures - Calculation the RBC count - Results: how write the result - o Normal value - o Interpretation: normal, low, high - o Quality control- Units of measurement	4	Practical Lab
3	Haemiglobincyanide photometric method - Principle - Materials and reagents - o Spectrophotometer1 (colorimeter) - o Spectrophotometer (or colorimeter) cuvettes - o Test-tubes - o Test-tube rack - o Blood (Sahli) pipettes, 0.2ml - o Drabkin diluting fluid (reagent no. 21) - o Reference solution,	4	Practical Lab
4	Calibration of the spectrophotometer methods - Procedures: - Calculation - Results:	4	Practical Lab



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N.	Subject	Contact hours	Lab, Hospital, field
	- Reference range - Interpretation: normal, low, high - Quality control		
5	Hemoglobin (Hb) Curve Preparation - Principles: - Procedures: - Calculation - Results: - Normal value - Interpretation: normal, low, high - Quality control	4	Practical Lab
6	Red Blood Cells counting - Instruments & Materials: blood sample, microscope, Counting chamber (haemocytometer) - Counting chamber cover glass, Sahli pipette. Hand tally counter. Pasteur Pipettes - Principles - Procedures - Calculation - Results - Normal value - Interpretation: normal, low, high - Quality control	4	Practical Lab
7	Staining thin blood films by Giemsa stain (May-Grunwald-Giemsa Stain) - Principles - Procedures - Results - Interpretation - Quality control	4	Practical Lab
8	Red Blood Cells Morphology 1- Normal red cell 2- Morphological abnormalities and variants - Microcytic RBCs Fe deficiency, thalassemia trait - Macrocytic RBCs B12 or folate deficiency - Dimorphic RBCs Fe deficiency responding to iron, mixed Fe and B12/folate deficiency, sideroblastic anaemia, post-transfusion - Reticulocytes: Response to bleeding, haemolysis, - Spherocytes: hereditary spherocytosis - Pencil/rod cells Fe deficiency anaemia, - Elliptocytes Hereditary elliptocytosis, - Fragmented red cells renal failure, TTP - Teardrop RBCs Myelofibrosis, - Sick cells Sick cell anaemia, other sickle	8	Practical Lab



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N.	Subject	Contact hours	Lab. Hospital, field
	syndromes (not sickle trait) - Target cells Liver disease, Fe deficiency, thalassemia, HbC syndromes. - Burr cells Renal failure - Acanthocytes Hereditary acanthocytosis, - Bite cells G6PD deficiency - Basophilic stippling lead poisoning, - Rouleaux formation: paraproteinaemia, myeloma - Reticulocytes Bleeding, haemolysis, - Heinz bodies G6PD deficiency - Howell-Jolly bodies post-splenectomy		
9	Hematocrit (Ht, Hct)/ Packing Cells Volume (PCV) and Measurement technique - Principles: - Procedures: - Calculation - Results: - Normal value - Relationship between the erythrocyte volume fraction and the haemoglobin concentration - Interpretation: normal, low, high - Quality control	4	Practical Lab
10	Measurement of the erythrocyte sedimentation rate - Principles - Procedures - Calculation - Results - Normal value - Interpretation: normal, low, high - Quality control	4	Practical Lab
11	Sickling tests - Principles - Procedures - Quality control - Results - Interpretation	4	Practical Lab
12	Reticulocytes count - Principles- Procedures -Quality control- Results and Interpretation	4	Practical Lab
13	RBC indices - Mean cell haemoglobin concentration MCHC - Mean cell haemoglobin (MCH) - Mean cell volume (MCV) - o Principles: - o Procedures: - o Calculation - o Quality control:	8	Practical Lab



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N.	Subject	Contact hours	Lab. Hospital, field
	- Results- Normal value - Interpretation: normal, low, high		
	Total	64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Baker, FJ, Silverton RE. Introduction to Medical Laboratory Technology. 6th Edition. Butterworths and Co. 1985.
2. Cheesbrough M. District Laboratory Practice in Tropical Countries. Part 2. Cambridge University Press. 2000.
3. Fischbach F. A Manual of Laboratory and Diagnostic Tests. 4th Edition J.B. Lippincott Co. 1992.
4. Hall, Roger and Mafia, Robert G. Medical Laboratory Hematology. Butterworths and Co. 1984.
5. Hayhoe, F.G.J. and Flemans R.J. A Color Atlas of Hematological Cytology. 3rd Edition Wolfe Publishing Ltd. 1992.
6. Henry JB. Clinical Diagnosis and Management by Laboratory Methods. 20th Edition. W.B. Saunders.
7. Hoffbrand, AV, Pettit JE. Essential Hematology. 3rd Edition. Blackwell Science. 1993.
8. Koepke, John A. Laboratory Hematology. Churchill Livingstone. 1984.
9. Lewis SM, Bain BJ, Bates I. Dacie and Lewis Practical Hematology. 9th Edition. Churchill Livingstone 2002.
10. Linne JJ, Ringsrud KM. Clinical Laboratory Sciences. The Basics and Routine Techniques. 4th edition. Mosby, Inc. 1999.
11. Luzzatto, Lucio (Editor). Clinics in Hematology: Hematology in Tropical Areas. Volume 10 Number 3 W.B. Saunders Co. Ltd. 1981.
12. Raphael, Stanley S. Lynch's Medical Laboratory Technology. 4th Edition Igaku-Shoin/Saunders International Edition. 1983.



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13. Ringsrud KM, Linne JJ. Urinalysis and Body Fluids. Mosby, Inc. 1995.
14. Robinson, SH, Reich PR. Hematology: Pathophysiologic Basis for Clinical Practice. 3rd Edition. Little, Brown and Company. 1993.
15. WHO Manual of Basic Techniques for a Health Laboratory. 1981
16. Wintrobe, Maxwell M. Clinical Hematology. 8th Edition. Lea and Febiger Philadelphia 1981.

Facilities Required:

- White board, computer, internet
- Data show
- Overhead projector
- Hand notes
- Lab (materials, glass wares, balances, etc.)
 - Microscope –slides and cover slides- spectrophotometer
 - Capillary tube –count chamber- syringes
 - Giemsa stain – Drabkin – turk solution – methylene crystal blue- Dettol
 - Isotonic normal saline- sickling test solution





Course Specification of Blood banking I

HIHS
1971



المعهد العالي للعلوم الصحية - منهد المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Blood banking I

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-2115a

Course semester:

1st year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulrazzaq Othman Al-agbare

Date of Specifications approval:





Professional Information

Course aims

This course aim to provides the Laboratory undergraduate student with basic knowledge about the blood banking, to help him to understand the importance of blood banking for evaluation of blood transfusion as one of the medical branches with great importance to save life.

Intended learning outcomes (ILOs)

A. Knowledge& Understanding

- a.1. Mention historical overview of blood transfusion and explain the inheritance of blood groups.
- a.2. Interpret Ag-Ab Reactions.

Strategies of Teaching And Learning:

1. Advance lecture.

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Discuss, the blood groups inheritance.
- b.2. explain the importance of blood group, subgroup of ABO and others blood group systems (Kell, Kidd etc.).

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional& Practical skills

At the end of this Course the student will be able to

- c.1. Perform and Collect Samples for Blood grouping, RhoD and others blood banking Tests
- c.2. Prepare washed RBC and normal saline.
- c.3. Write the blood group, RhoD and other blood banking reports.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam



D. Transferable skills

- d.1. Organize and set-up a laboratory of health establishment.
- d.2. Keeps proper way of records, writing monthly and annual report, writing scientific reports and present them to others in group discussion.
- d.3. Knows and request the laboratory equipment and their parts their parts.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Historical Overview of blood transfusion Blood components	1	Advance lecture
2	The Discovery of ABO Blood Group Blood Group Genetics The Role of H-Gene in the Expression of ABO Genes	2	Advance lecture
3	Inheritance of The ABO Groups Secretors and Non-Secretors The ABO Blood Group Blood group antigens	2	Advance lecture
4	Characteristics of ABO antibodies Clinical significance of ABO antibodies	1	Advance lecture
5	weaker subgroups of ABO system Bombay blood group	1	Advance lecture
6	MIDTERM EXAM	1	
7	Production of Subgroups of A and B. The Hh blood group	1	Advance lecture
8	Antigens and Antibodies in blood banking Antiserum Manifestations and Interpretation of Ag-Ab Reaction	2	Advance lecture
9	Historical Background of Rh-Hr Blood Grouping Nomenclature & Genetic Theories	1	Advance lecture
10	The Antigens of the Rh-Blood Group System Variants of Rh Antigen	1	Advance lecture
11	• Rhesus Antibodies • Uncommon Rh phenotypes	1	Advance lecture
12	General and brief about 1. The Kell Blood Group System	2	Advance lecture



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No.	Subject	Contact hours	Learning & teaching strategies
	2. The Duffy blood group 3. MNS SYSTEM 4. Kidd Blood Group System 5. Lewis System		
Total			16

2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Blood bank introduction Standard operating procedures (SOPs) Blood bank importance Organization of blood transfusion services at Blood bank working plane	4	Theoretical
2	Blood bank instrumentation Blood collecting pack and Paediatric Blood collecting pack The anticoagulant solution used in blood collection bags	4	Theoretical /show
3	Field training – into the central blood bank	8	Theoretical /show
4	Blood bank reagents Preparation (Normal saline, AHg, Anti-A and anti-B sera: etc. Names, preparation, Uses	4	Practical Lab
5	Preparation of Red Cell Suspension Preparation of washed red cell suspensions (3-5% and 20-30%)	4	Practical Lab
6	preparation known cells (A cells, B Cells O Cells) Uses of Anti Sera (Anti A, Anti B, Anti AB, Anti D ---etc.)	4	Practical Lab
7	The antisera for A blood group Anti-A and antiA ₁ uses and importance	4	Practical Lab
8	Techniques of The Direct ABO Blood Grouping Slide method	4	Practical Lab
9	Techniques of ABO Blood Grouping Test tube method	4	Practical Lab
10	The Indirect ABO Blood Grouping Test tube method	4	Practical Lab
11	Midterm exam	4	Practical Lab
12	Methods of Rh Technique Slide Test Method -Rhesus (D) Typing	4	Practical Lab
13	Methods of Rh Technique Modified Tube Test Method	4	Practical Lab
14	Du Typing Using Indirect Anti- Globulin Test (IAT)	4	Practical Lab
15	Manifestation and Interpretation of Antigen- Antibody reactions Agglutination: The strength of an agglutination reaction Hemolysis:	4	Practical Lab
Total		64	



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Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Benjamini E, Coico R, sunshine G. Immunology A short Course, 4th ed. Wiley Liss, 2000.
2. Boorman Kathleen E, Dodd Barbara E, Lincolon P.J. Blood Group Serology, 6th ed. Churchill Livingstone, UK, 1988.
3. Bryant Neville J an Introduction to Immunohematology, 3rd ed. Philadelphia, WB saunders, 1994.
4. Cheesbrough Monica. District Laboratory practice in Tropical countries, Part 2. Cambridge, UK, 2000.
5. Estridge BH, Reynolds AP, Walters NJ. Basic Medical Laboratory Techniques, 4th ed. Delmar, 2000.
6. Linne JJ, Ringsrud KM. Clinical Laboratory science: The Basics and Routine Techniques, 4th ed. Mosby, 1999.
7. Louise Mary Turgeon. Fundamentals of Immunohematology, Theory and Technique. 2nd ed. Williams and Wilkins, New York, 1995.
8. McClelland DBL. Hand book of transfusion medicine, 3rd ed. The stationery office, London, 2001.
9. Tibebe M, The Blood Bank Manual, Ethiopian Red cross society, National Blood Transfusion Service, Addis Benjamini E, Coico R, sunshine G. Immunology A Short Course, 4th ed. Wiley Liss, 2000.
10. Boorman Kathleen E, Dodd Barbara E, Lincolon P.J. Blood Group Serology, 6th ed. Churchill Livingstone, UK, 1988.
11. Bryant Neville J an Introduction to Immunohematology, 3rd ed. Philadelphia, WB saunders, 1994.
12. Cheesbrough Monica. District Laboratory practice in Tropical countries, Part 2. Cambridge, UK, 2000, 2006.
13. Estridge BH, Reynolds AP, Walters NJ. Basic Medical Laboratory Techniques, 4th ed. Delmar, 2000.



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14. Linne JJ, Ringsrud KM. Clinical Laboratory science: The Basics and Routine Techniques, 4th ed. Mosby, 1999.
15. Louise Mary Turgeon. Fundamentals of Immunohematology, Theory and Technique. 2nd ed. Williams and Wilkins, New York, 1995.
16. McClelland DBL. Hand book of transfusion medicine, 3rd ed. The stationery office, London, 2001.
17. Tibebe M, The Blood Bank Manual, Ethiopian Red cross society, National Blood Transfusion Service, Addis
18. MANUAL OF BASIC TECHNIQUES Second edition, World Health Organization, Geneva, 2003
19. Lewis SM, Bain BJ, Bates I. Practical haematology, 9th Edition, 2001. Churchill Livingstone, Elsevier.
20. Provan D et al. Oxford handbook of clinical haematology, 2nd edition, 2004. Oxford University Press.

Facilities Required:

- White board
- Markers
- Data show
- Overhead projector
- Lab content:
 - Centrifuge – water bath -syringes
 - Normal saline – ABO blood group –Rh- anti-D- albumin- Bovine albumin





Course Specification of
Systemic bacteriology II
(Gram negative bacteria)

HIHS

1971



المفهد العالي للعلوم الصحية – مفهد المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Systemic bacteriology II (Gram negative bacteria)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-214c

Course semester:

2nd year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Fatima.Al- Wathaf

Date of Specifications approval:



Professional Information

Course aims

This course provides knowledge on the gram negative bacteria and diseases which are caused by these species. It also provides skills for specimens collection and transport and laboratory diagnosis of Gram negative bacterial infections with consideration of antibiogram testing.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Explain the characteristics, structure and classification of Gram negative bacteria.
- a.2. Identify the pathogenesis and laboratory diagnosis of Gram negative bacteria.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Formulate a scheme of lab diagnosis for Gram negative bacteria.
- b.2. Select the appropriate identification requirements for each organism in Gram negative bacteria.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

At the end of this Course the student will be able to

- c.1. appropriately prepare media and biochemical tests that required for Gram negative identification.
- c.2. Perform inoculation of specimens, isolation and identification of Gram negative bacteria.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam

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D. Transferable skills

- d.1. Communicate effectively by written and oral means
- d.2. Manage time effectively.

Strategies of Teaching And Learning:

- 1. Interactive group discussion.
- 2. Oral presentation.

Assessment & Evaluation Methods:

- 1. Evaluation of group discussion.
- 2. Oral presentation evaluation.

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Escherichia coli: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment	1	Advance lecture
2	Klebsiella pneumonia: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment Citrobacter, Enterobacter and Serratia	1	Advance lecture
3	Salmonella species: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment Shigella species	1	Advance lecture
4	Proteus species: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment Morganella and providencia	1	Advance lecture
5	Pseudomonas aeruginosa: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment Moraxella species	1	Interactive group discussion.
6	Vibrio species: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment Yersinia enterocolitica and Aeromonas	1	Advance lecture
7	Helicobacter and campylobacter:	1	Advance lecture



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No.	Subject	Contact hours	Learning & teaching strategies
	1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment		
8	Bacteroides: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment Prevotella melaninogenica	1	Interactive group discussion.
9	Midterm Exam		
10	Neisseria species: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment		
11	Haemophilus influenzae: 4- Characteristics 5- Pathogenesis 6- Laboratory diagnosis and treatment Haemophilus ducreyi	1	Advance lecture
12	Bordetella pertussis: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment	1	Advance lecture
13	Brucella: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment Pasteurella multocida and Yersinia pestis	1	Interactive group discussion.
14	Chlamydia and Rickettsia: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment Coxiella burnetii	1	Advance lecture
15	Spirochetes: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment	1	Advance lecture
16	Legionella and Mycoplasma: 1- Characteristics 2- Pathogenesis 3- Laboratory diagnosis and treatment	1	Oral presentation.
Total			16

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2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Laboratory isolation and identification of <i>Escherichia coli</i>	4	Practical Lab
2	Laboratory isolation and identification of <i>Klebsiella pneumonia</i>	4	Practical Lab
3	Laboratory isolation and identification of <i>Citrobacter</i> , <i>Enterobacter</i>	4	Practical Lab
4	Laboratory isolation and identification of <i>Salmonella</i> species & Laboratory isolation and identification of <i>Shigella</i> species	4	Practical Lab
5	Laboratory isolation and identification of <i>Proteus</i> species	4	Practical Lab
6	Laboratory isolation and identification of <i>Pseudomonas aeruginosa</i>	4	Practical Lab
7	Laboratory isolation and identification of <i>Vibrio</i> species	4	Practical Lab
8	Laboratory isolation and identification of <i>Helicobacter</i> and <i>campylobacter</i>	4	Practical Lab
9	Midterm	4	Practical Lab
10	Laboratory isolation and identification of <i>Bacteroides</i> <i>Bordetella pertussis</i>	4	Practical Lab
11	Laboratory isolation and identification of <i>Haemophilus influenza</i>	4	Practical Lab
12	Laboratory isolation and identification of <i>Neisseria</i> species	4	Practical Lab
13	Laboratory isolation and identification of <i>Brucella</i> , <i>Chlamydia</i> and <i>Rickettsia</i>	4	Practical Lab
14	Laboratory isolation and identification of <i>Spirochetes</i>	4	Practical Lab
15	Laboratory isolation and identification of <i>Legionella</i> and <i>Mycoplasma</i>	4	Practical Lab
16	Practical review of Gram negative	4	Practical Lab
Total		64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%



Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. W. Levinson -2010- Review of medical microbiology and immunology - 11th Edition - McGraw-Hill
2. Jawetz, Melnick & adleberg's- 2010- Medical microbiology- 25th Edition- McGraw-Hill

Facilities Required:

- White board, computer, internet, Data show, Hand notes
- Microbiology Lab:
 1. Microscope
 2. Incubator
 3. Autoclave
 4. Safety cabinet
 5. Centrifuge
 6. Bunsen burner and wire and plastic loop
 7. Refrigerator
 8. Candle jar
 9. Glasses
 10. Stains
 11. Bacteriological media (Nutrient agar, Nutrient broth, Blood agar, MacConkey agar, Muller hinton agar)
 12. Biochemical tests media and reagents (Triple sugar iron, Sulphur indole motility medium, Citrate agar, urease agar and oxidase test).
 13. Antibiotics discs.

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Course Specification of Clinical chemistry II (Enzymology)



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Clinical chemistry II (Enzymology)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-212c

Course semester:

2nd year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Heyder Al Mamari

Date of Specifications approval:

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Professional Information

Course aims

This course provides the student with knowledge on the biochemical parameters for liver, myocardial, prostatic and pancreatic pathology. It also provides skills for laboratory detection of these parameters.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Discuss the basic disorders of the liver, cardium, prostate and pancreas.
- a.2. Describe the pathological mechanisms resulting in liver, myocardial, prostatic and pancreatic dysfunction and the markers used for their laboratory diagnosis.

Strategies of Teaching And Learning:

1. advanced lectures.

Assessment & Evaluation Methods:

1. MSQ.
2. Matching.
3. Short assay.

B. Intellectual skills

- b.1. Compare which enzymes are useful in the diagnosis of cardiac disorders, hepatic disorders, bone disorders, muscle disorders, malignancies and acute pancreatitis.
- b.2. Predict sources of errors in measurement of these enzymes.
- b.3. Formulate scheme of enzyme according the diseases

Strategies of Teaching And Learning:

- 1- Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Perform the laboratory tests for measurement of bilirubin, liver, myocardial, pancreatic and prostatic enzymes.
- c.2. perform the calibration and control of the above tests.

Strategies of Teaching And Learning:

1. Practical Lab.

Assessment & Evaluation Methods:

1. Practical exam.



D. Transferable skills

d.1. Communicate effectively by written and oral means

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Liver enzymes: 1. Definition. 2. Description. 3. Clinical significant. 4. Interpretation and indication.	6	Advanced lecture, interactive group discussion, written assignment.
2	Myocardial enzymes: 1. Definition. 2. Description. 3. Clinical significant. 4. Interpretation and indication.	4	Advanced lecture, interactive group discussion, written assignment.
3	Prostatic enzymes: 1. Definition. 2. Description. 3. Clinical significant. 4. Interpretation and indication.	2	Advanced lecture, interactive group discussion, written assignment.
4	Pancreatic enzymes: 1. Definition. 2. Description. 3. Clinical significant. 4. Interpretation and indication.	2	Advanced lecture, interactive group discussion, written assignment.
5	Bone and tumor enzymes: 1. Definition. 2. Description. 3. Clinical significant. 4. Interpretation and indication.	2	Advanced lecture, interactive group discussion, written assignment.
Total		16	



2- Practical Subjects:

N.	Subject	Contact hours	Learning & teaching strategies
1	Estimation of liver function 1. tests (LFT): 2. Alanine transaminase (ALT). 3. Aspartate transaminase (AST). 4. Lactate dehydrogenase (LDH). 5. Alkaline phosphatase (ALP). 6. γ -Glutamyl transferase (GGT). 7. Bilirubin (Total, direct & indirect).	24	Lab. Practice Illustration
2	Estimation of Cardiac enzymes LDH, Total creatine kinase (T- CK) Creatine kinase (CKMB) Troponin	16	Lab. Practice Illustration
3	Estimation of prostatic enzyme (Acid phosphatase)	4	Lab. Practice Illustration
4	Estimation of pancreatic enzyme (Amylase)	4	Lab. Practice Illustration
5	Estimation of bone enzymes ALP	4	Lab. Practice Illustration
6	Estimation of malignancy enzymes (AC15, AC25 and AFP)	12	Lab. Practice Illustration
Total		64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16



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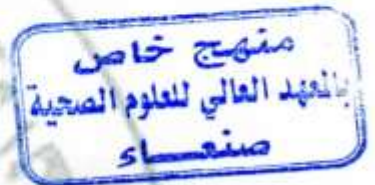
Learning resources:

References:

- 1- Clinical chemistry, Principles, procedures and Correlations, 5th edition, by Bishop, Fody and Choeff. Lipincott Williams & Wilkins.
- 2- Teitz Fundamentals of clinical chemistry, 5th edition, by Burtis & Ashwood. Saunders Harcourt, India.

Facilities Required:

- White board, computer, internet
- Data show
- Overhead projector
- Hand notes
- Lab (materials, glass wares, balances, etc.)
- Spectrophotometer
- Micropipette
- Water path
- Reagents:
 - Alanine transaminase (ALT).
 - Aspartate transaminase (AST).
 - Lactate dehydrogenase (LDH).
 - Alkaline phosphatase (ALP).
 - γ -Glutamyl transferase (GGT).
 - Bilirubin (Total, direct & indirect).
 - Total creatine kinase (T- CK)
 - Creatine kinase (CKMB)
 - Troponin
 - Acid phosphatase
 - Amylase





Course Specification of Parasitology II (Helminths)

HIHS

1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Parasitology II (Helminths)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-2113b

Course semester:

2nd year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Tariq Al Hidabi

Date of Specifications approval:





Professional Information

Course aims

This course aims to provides the student with knowledge and skills on helminths to enable the student of identification the morphology characters, pathogenesis (mode of transmission, life cycle, clinical manifestations), laboratory diagnosis, prevention, and control of helminths.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Mention the characters of helminths.
- a.2. Classify the helminths.
- a.3. Discuss the pathogenesis of helminths.

Strategies of Teaching And Learning:

- 1- Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. compare between protozoa and helminths (general features).
- b.2. compare between diagnostic stages of helminths.
- b.3. Predict the prevention & control methods of helminths.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional& Practical skills

- c.1. Identify the diagnostic stages of helminths microscopically.

Strategies of Teaching And Learning:

1. Practical Lab.

Assessment & Evaluation Methods:

1. Practical Exam.



D. Transferable skills

d.1. conduct the group work reliability.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

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Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction to Helminths Definition of helminths. General characters. Classification.	2	Advanced lecture
2	Teania saginata & Teania solium Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion Presentation
3	Hymenolepis nana & Hymenolepis diminuta Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion Presentation
4	Diphyllobothrium latum Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion
5	Echinococcus granulosus Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture
6	Fasciola hepatica & Fasciolopsis buski Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion Presentation



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No.	Subject	Contact hours	Learning & teaching strategies
7	Heterophyes heterophyes Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion
8	Midterm Exam	2	
9	Schistosoma haematobium & Schistosoma mansoni Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion
10	Ascaris lumbricoides Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion
11	Ancylostoma duodenale Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion
12	Strongyloids stercoralis Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion
13	Trichuris trichiura Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion
14	Enterobius vermicularis Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion Presentation
15	Wuchereria bancrofti Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture Interactive group discussion
16	Onchocerca volvulus Definition. Morphology characters. Pathogenesis. Prevention and control.	2	Advanced lecture interactive group discussion Presentation
Total			32



2- Practical Subjects:

N.	Subject	Contact hours	Learning & teaching strategies
1	Teania saginata & Teania solium Identification of the ova microscopically. Identification of the gravid segments macroscopically.	4	Practical Lab.
2	Hymenolepis nana & Hymenolepis diminuta Identification of the ova microscopically.	4	Practical Lab
3	Diphyllobothrium latum Identification of the ova microscopically.	4	Practical Lab
4	Echinococcus granulosus Identification of the Hydatid cyst macroscopically.	4	Practical Lab
5	Fasciola hepatica & Fasciola gigantica Identification of the ova microscopically. Fasciolopsis buski Identification of the ova microscopically Heterophyes heterophyes Identification of the ova microscopically	4	Practical Lab
6	Schistosoma mansoni Identification of the ova microscopically	4	Practical Lab
7	Med term exam.	4	Practical Lab
8	Schistosoma haematobium Identification of the ova microscopically.	4	Practical Lab
9	Ascaris lumbricoides Identification of the adult worms macroscopically. Identification of the ova microscopically.	4	Practical Lab
10	Ancylostoma duodenale Identification of the ova microscopically.	4	Practical Lab
11	Strongyloides stercoralis Identification of the ova microscopically.	4	Practical Lab
12	Trichuris trichiura Identification of the ova microscopically.	4	Practical Lab
13	Enterobius vermicularis Identification of the female worm macroscopically. Identification of the ova microscopically.	4	Practical Lab
14	Onchocerca volvulus & Wuchereria bancrofti Identification of the microfilaria microscopically.	4	Practical Lab
15	Final exam	4	Practical Lab
	Total	64	

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



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Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

- 1- Cheesbrough Monica, 2005, District Laboratory Practice in Tropical Countries, Part 1, Cambridge University Press.
- 2- Peters Wallace & Pasvol Geoffrey, 2007, Atlas of Tropical Medicine and Parasitology, Sixth edition, Elsevier Mosby.

Facilities Required:

Instruments:

- Data show.
- Overhead projector.
- Microscopes.

Solutions:

- Formalin solution 10%
- Normal saline solution 0.9%

Materials:

- White board.
- Markers.
- Paper of overhead projector (translucent Papers)
- Microscopes slides & cover slides.
- Demonstrative slides of helminths diagnostic stages.



Course Specification of Clinical Immunology

HIHS
1971



Basic Information

Course title:

Clinical Immunology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-2114b

Course semester:

2nd year - 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Helal Ali

Date of Specifications approval:



Professional Information

Course aims

At the end of this course the student should be able to:

Explain the role of natural and acquired immunity against infections, identify the adverse of immunological reaction and immune deficiency, describe the principles of serological reaction and perform the various of serological tests, also help the students to explain the principles of Blood grouping and Tissue typing.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- Identify the autoimmune disease, Hypersensitivity reaction and Immunodeficiency.
- Explain the methods and principles of ELISA, Immunofluorescence and Radioimmunoassay.

Strategies of Teaching And Learning:

- Advance lecture

Assessment & Evaluation Methods:

- Short Essay & Multiple chooses Questions.

B. Intellectual skills

- Differentiate between Autoimmunity, Hypersensitivity and Immunodeficiency.
- Select the best methods according to each disease.

Strategies of Teaching And Learning:

- Interactive group Discussion

Assessment & Evaluation Methods:

- Group discussion evaluation

C. Professional & Practical skills

- Perform the various Assays (ELISA, IF, RIA).
- Perform the serial dilution.

Strategies of Teaching And Learning:

- Practical Lab

Assessment & Evaluation Methods:

- Practical exam

منفهد خاص
المفهد العالي للعلوم الصحية
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D. Transferable skills

- d.1. Record the results
- d.2. Interpretation the results
- d.3. Reporting the results.

Strategies of Teaching And Learning:

- 1. Interactive group discussion
- 2. Oral presentation

Assessment & Evaluation Methods:

- 1. Evaluation of group discussion
- 2. Oral presentation evaluation

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Immunochromatographic assay (Device) Definition Principle Sample Types Procedure Results Interpretation of result. Detection of: Syphilis, Pregnancy, Anti-HCV Radiimmunoassay (RIA) Definition Principle Sample Types Procedure Results Interpretation of result. Immunofluorescence antibody assay (IFAA) Definition Principle Sample Types Procedure Results Interpretation of result. Detection of: Rabies and autoimmune antibodies	2	Advanced Lectures Presentation (data show) Create Scheme



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No.	Subject	Contact hours	Learning & teaching strategies
2	Immune response (1) Humoral immunity Definition Structure Types (IgG, IgA, IgM, IgD and IgE) Properties Importance in clinical medicine. (2) Cellular immunity (CMI) Definition Types Mechanisms Biological significance Infection involving CMI.	4	Advanced Lectures Presentation (data show) Create Scheme
3	Adverse reaction of immune system-I Hypersensitivity reactions. Definition Types Mechanisms Clinical feature.	4	Advanced Lectures Create Scheme Presentation (data show)
4	Adverse reaction of immune system-II Auto immunity disease. Definition Types Etiology Features.	2	Advanced Lectures Create Scheme Discussion group
5	Immunodeficiency (Id). 1- Congenital ➤ Humoral (Id). ➤ Cell-mediated (Id). ➤ Phagocytosis (Id). ➤ Complement (Id). 2- Acquired Immunodeficiency Definition Types Mechanisms	4	Advanced Lectures Discussion group Create Scheme
Total			16

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2- Practical Subjects:

No.	Subject	Contact hours	Lab. Hospital, field
1	The enzyme-linked immunosorbent assay (ELISA), Direct 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
2	In direct (ELISA) 1. principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
3	Sandwich (ELISA) 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
4	Competitive (ELISA) 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	2	Practical Lab.
5	Immunofluorescence assay 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
6	Autoimmune disease 1. Principles. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results.	4	Practical Lab.
7	ANA 1. Principle. 2. Procedures.	2	



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No.	Subject	Contact hours	Lab. Hospital, field
	3. Result. 4. Comment. 5. 5-Interpretation of results.		
8	AMA 1. Principle. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results	2	
9	ASMA 1. Principle. 2. Procedures. 3. Result. 4. Comment. 5. 5-Interpretation of results	2	
10	RIA 1. Principle. 2. Procedures. 3. Result. 4. Comment. 5. Interpretation of results	4	
Total			32

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16



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Learning resources:

References:

1. Course Notes; Introduction to Immunology-2012.
2. Essential Immunology-2010.
3. Medical Laboratory Manual for Tropical Countries-2009.

Facilities Required:

1. Lecture hall
2. Computer
3. Data show
4. Lab requirement:

ELISA, IFS, RIA, ANA, ASMA, Anticardiolipin





منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Course Specification of Body fluids

H I H S

1971



المفهد العالي للعلوم الصحية – مفهد المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Body fluids

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-2116

Course semester:

2nd year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulhabeab

Date of Specifications approval:



Professional Information

Course aims

By the end of this course the student should be able to:

1. List and describe body fluids that may be analyzed for diagnostic purposes in the laboratory.
2. Discuss macroscopic, chemical and microscopic testing of body fluids and explain the principles of each test.
3. Describe major body fluids clinical impact.
4. Describe the composition, size, formation, function and normal and abnormal characteristics of body fluids.
5. Explain the collection procedure for body fluids.
6. Evaluate the suitability of the body fluid specimens collected.
7. Evaluate laboratory test outcomes and correlate test results with patient condition(s).

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

By the end of the course the student will be able to:

- a.1. Define terms associated with body fluid testing.
- a.2. Describe the physical properties of body fluids.
- a.3. Describe the collecting and handling, composition, formation and function of body fluids.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

By the end of the course the student will be able to:

- b.1. Evaluate and correlate laboratory results with patient condition(s)
- b.2. Evaluate specimen acceptability; explain principles of each test included in a routine urinalysis.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation





C. Professional & Practical skills

By the end of the course the student will be able to:

- c.1. Differentiate between normal and abnormal characteristics of body fluids using physical, chemical, and microscopic examinations.
- c.2. Describe quality control issues associated with reagent strips.
- c.3. Identify the sediment constituents seen in microscopic examination of body fluids
- c.4. Summarize handling and testing procedures common for various body fluids.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam

D. Transferable skills

By the end of the course the student will be able to:

- d.1. Work effectively in a group during preparation of seminars.

Strategies of Teaching And Learning:

1. Interactive group discussion.
2. Oral presentation.

Assessment & Evaluation Methods:

1. Evaluation of group discussion.
2. Oral presentation evaluation.



Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Urine: Urine formation, normal composition Physical examination (normal and abnormal color, volume, pH and specific gravity) Chemical examination (Glucosuria, Proteinuria, bilirubin, urobilinogen and Ketone bodies) Microscopic examinations	9	Advanced Lectures and interactive class discussions Seminars
2	Semen: Introduction, formation of semen and normal composition	2	advanced lecture
3	Cerebrospinal Fluid: Formation, function, normal composition, collection techniques,	2	Seminar advanced lecture
4	Pleural effusion: Exudates & transudate effusions Chylous and pseudo-chylous Collection techniques, Physical, chemical and microscopic examinations	1	advanced lecture
5	Synovial Fluid: Collection techniques, Physical, chemical and microscopic examinations	2	advanced lecture
Total			16

2- Practical Subjects:

No.	Subject	Contact hours	Lab. Hospital, field
1	Urine collection techniques, concentration and usage of urine preservatives	8	Practical Lab
2	Physical examination of urine	4	Practical Lab
3	Chemical examination of urine	8	Practical Lab
4	Microscopic examination of urine	8	Practical Lab
5	Semen collection techniques Physical and chemical examination	8	Practical Lab
6	Microscopic examination (Sperm count and morphology)	4	Practical Lab
7	physical, chemical, microscopic examinations of CSF	8	Practical Lab
8	Bacteriological & serological tests of CSF	8	Practical Lab
9	Collection techniques, Physical, chemical and microscopic examinations of Synovial Fluid	8	Practical Lab
Total		64	



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Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

Urinalysis and Body Fluids, Susan K. Strasinger and Marjorie S. Di Lorenzo, 5th ed., F.A. Davis, 2008.

Graff's Textbook of routine urinalysis and body fluids, Lillian A. Mundt, Kristy Shanahan, 2nd ed., 2011.

Websites:

<http://www.enjopypath.com/cp/Chem/Urine-Morphology/Urine-morphology.htm/>
<https://www.biochemistry.org/>
<http://www.biochemj.org/bj/default.htm/>
<http://journal.chemistrycentral.com/>

Facilities Required:

- Lecture hall
- Computer
- Data show
- Lab requirement:
- Microscope
- Centrifuge
- Spectrophotometer
- Reagent strep (comber nine)



October
2019

Courses Specification

Second year – Second Semester





Course Specification of
Clinical chemistry III
(Hormones and Electrolytes)

HIHS
1971



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Basic Information

Course title:

Clinical chemistry III (Hormones and Electrolytes)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3Credit Hours

Code Number:

HS-LAB-222d

Course semester:

2nd year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Heder Al Mamari

Date of Specifications approval:





Professional Information

Course aims

This course describes the general properties and functions of pituitary, thyroid, adrenal and sex hormones and explains their clinical significance. The course also describes electrolytes and explains their clinical significance. It also provides skill for laboratory measurements of these hormones and electrolytes.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Mention the properties and functions of hormones and electrolytes.
- a.2. Discuss the biosynthesis, secretion, transport and action of the thyroid hormones.
- a.3. Explain the clinical significance of pituitary, thyroid, adrenal, sex hormones and electrolytes.

Strategies of Teaching And Learning:

- 1- Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple choice Questions.

B. Intellectual skills

- b.1. Classify hormones according to their structure and functions
- b.2. Differentiate between primary and secondary hormone disorders
- b.3. Compare and contrast the various methodologies used to assay hormone levels.

Strategies of Teaching And Learning:

- 1- Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Perform the laboratory tests for measurements of pituitary, thyroid, adrenal and sex hormones and electrolytes

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam

D. Transferable skills

- d.1. Communicate effectively by written and oral means

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation



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Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Hormones and Electrolytes introduction: 2- Hormones. 3- Definition. 4- Description. 5- Classification. 6- Hormones action.	2	1- Advanced lecture. 2- Interactive group discussion. 3- Written assignment.
2	Pituitary hormones: 1- Definition. 2- Description. 3- Clinical significant. 4- Interpretation and indication.	2	1- Advanced lecture. 2- Interactive group discussion. 3- Written assignment
3	Thyroid hormones: 1- Definition. 2- Description. 3- Clinical significant. 4- Interpretation and indication.	2	1- Advanced lecture. 2- Interactive group discussion. 3- Written assignment
4	Adrenal hormones: 1- Definition. 2- Description. 3- Clinical significant. 4- Interpretation and indication.	2	1- Advanced lecture. 2- Interactive group discussion. 3- Written assignment
5	Gonads Hormones: 1- Definition. 2- Description. 3- Clinical significant. 4- Interpretation and indication.	2	1- Advanced lecture. 2- Interactive group discussion. 3- Written assignment
6	Electrolytes: 1- Description. 2- Function. 3- Role of electrolyte in water balance. 4- Role of electrolyte in acid base balance.	2	1- Advanced lecture. 2- Interactive group discussion. 3- Written assignment
7	Calcium, potassium, sodium, chloride, magnesium and phosphate: 1- Definition. 2- Description.	4	1- Advanced lecture. 2- Interactive group discussion. 3- Written assignment



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No.	Subject	Contact hours	Learning & teaching strategies
	3- Clinical significant. 4- Interpretation and indication.		
	Total	16	

7- Practical Subjects:

No.	Subject	Contact hours	Lab. Hospital, field
1	Determination of pituitary hormones. (GH, Prolactin, FSH, LH).	8	Practical Lab
2	Determination of thyroid hormones. (T3 & T4, TSH).	8	Practical Lab
3	Determination of serum cortisol.	4	Practical Lab
4	Determination of testosterone.	4	Practical Lab
5	Determination of serum estradiol.	4	Practical Lab
6	Determination of progesterone.	4	Practical Lab
7	Determination of electrolyte for Ca	4	Practical Lab
8	Determination of electrolyte for K	4	Practical Lab
9	Determination of electrolyte for Na	4	Practical Lab
10	Determination of electrolyte for Mg	4	Practical Lab
11	Determination of electrolyte for Cl	4	Practical Lab
12	Determination of electrolyte for P	4	Practical Lab
13	Determination of TIBC	4	Practical Lab
14	Determination of serum iron	4	Practical Lab
	Total	64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16



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Learning resources:

References:

1. Clinical Chemistry, Principles, procedures and correlations, 5th edition, by Bishop, Fody & Choeff. Lipincott Williams & Wilkins.
2. Teitz Fundamentals of Clinical Chemistry, 5th edition, by Burtis & Ashwood. Saunders Harcourt, India.

Facilities Required:

- White board, computer, internet
- Data show
- Overhead projector
- Hand notes
- Lab requirement:
- ELISA manual instrumentation
- ELISA kits:

T3- T4- Thyroid stimulating hormone - Cortisol-Follicular stimulating hormone-
Latinizing hormone - Testosterone- Estradiol- Progesterone- Prolactin - Growth
hormone- Calcium - Sodium - Potassium - Phosphorus- Magnesium- Chloride- Iron -
Total iron binding capacity





Course Specification of Hematology III



Basic Information

Course title:

Hematology III (White blood cells and hemostasis disorders)

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-2212c

Course semester:

2nd year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulrazzaq Othman Al-agbare

Date of Specifications approval





Professional Information

Course aims

This course aim to provides the **Laboratory undergraduate student** with the knowledge about leukocytes and coagulation disorders in health and disease. to help him to understand the importance of leukocytes and coagulation disorders diagnosis to meet the patient's needs for good and professional diagnosis.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Mention the causes of leukocytosis, leukopenia, thrombocytosis, thrombocytopenia and explain the coagulation mechanism
- a.2. Explain the classification and predisposing factors of leukemia and others blood malignancies.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Discuss the role of white blood cells and thrombocytes in health
- b.2. Explain the coagulation disorders, types of leukemia's and others blood malignancies

Strategies of Teaching And Learning:

- 1- Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

At the end of this Course the student will be able to

- c.1. Perform WBC and platelets tests manually and on automated machine and Prepare Bone marrow slides for specialist.
- c.2. Perform routine coagulation tests.
- c.3. Recognize the morphology of leukemic cells and abnormal platelets.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam



D. Transferable skills

- d.1. Organize and set-up a laboratory of health establishment.
- d.2. Keeps proper way of records.
- d.3. Keeps proper way of records and Prepare monthly and annual report writing.
- d.4. Read and write scientific reports and present them to others in group discussion and Work in group team.

Strategies of Teaching And Learning:

1. Interactive group discussion.
2. Oral presentation.

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction: Introduction-Leukocytes-Leukocytosis Types of the WBC Types and characteristic of granular cells (Neutrophils-Eosinophils-Basophils and Monocytes (Macrophage)	1	1-advanced lecture. 2-interactive group discussion.
2	Granular cells disorder and evaluation: White blood cells laboratory approach and evaluation Absolute and relative neutrophilia, eosinophilia and basophilia Leukocytosis, Differential diagnosis, Manual counting advantages and disadvantages Automated method advantages and disadvantages	1	1-advanced lecture. 2-interactive group discussion.
3	Non-Granular cells disorders and evaluation: Lymphocytes types- characteristics Lymphocytes, developing, lymphoid organs, lymphocytosis, absolute and relative, lymphocytes in adult, infant and children	1	1-advanced lecture. 2-interactive group discussion.
4	Leukemia: The Malignant Hematological Disorders Classification and laboratory approach and evaluation	1	1-advanced lecture. 2-interactive group discussion.



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No.	Subject	Contact hours	Learning & teaching strategies
5	Acute leukemia: Acute myeloblastic leukemia (AML) Acute lymphblastic leukemia (ALL) Risk factors Diagnosis and differential diagnosis	2	1-advanced lecture. 2-interactive group discussion.
6	Chronic leukemia (1): The chronic myeloproliferative disorders (CMPDs) Chronic myeloid leukemia (CML) Leukemoid Reaction Introduction Risk factors Diagnosis and differential diagnosis Polycythemia -Polycythemia vera (PV) Essential Thrombocythemia (ET)	1	1-advanced lecture. 2-interactive group discussion.
7	Midterm exam	1	
8	Chronic leukemia (2): The chronic Lymphoproliferative disorders Chronic Lymphocytic leukemia (CLL)	2	1-advanced lecture. 2-interactive group discussion.
9	Hemostasis disorders: Introduction The hemostatic system consists of Blood coagulation, Thrombocytes (Platelets) Platelet Structure, the functions of platelets in homeostasis include; Steps of platelets function The role of blood vessels in hemostasis	1	1-advanced lecture. 2-interactive group discussion.
10	The coagulation factors (1): The coagulation factors-Proprieties Concentrations of coagulation factors required for normal hemostasis Vitamin – K dependent clotting factors	1	1-advanced lecture. 2-interactive group discussion.
11	The coagulation factors (2): About Factor III, V and VIII -von Willebrand factor -Protein C and protein S: -Plasminogen/Plasmin	1	1-advanced lecture. 2-interactive group discussion.
12	Hemostatic process: Hemostatic process components 1. primary hemostasis 2. secondary hemostasis 3. tertiary hemostasis The coagulation pathways	1	1-advanced lecture. 2-interactive group discussion.



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No.	Subject	Contact hours	Learning & teaching strategies
	1. The extrinsic pathway 2. Intrinsic pathway 3. The common pathway Fibrinolytic system--Inhibitors of coagulation		
13	Bleeding disorders: Bleeding disorders Causes of bleeding disorders Platelet disorders- Thrombocytosis, Thrombocytopenia Thrombocytopathy Coagulation factor deficiency-Hemophilia- 1-Hemophilia A (Classic Hemophilia) 2-Hemophilia B (Christmas Disease)	1	1-advanced lecture. 2-interactive group discussion.
14	Bleeding disorders Tests (Laboratory evaluation): Platelets count -Bleeding Time (BT) Prothrombin Time: (PT) -Partial Thromboplastin Time (PTT or aPTT) Thrombin Time (TT) -D-Dimer test	1	1-advanced lecture. 2-interactive group discussion.
	Total	16	

2- Practical Subjects:

No.	Subject	Contact hours	Lab. Hospital, field
1	White blood cells – normal morphology in the peripheral blood	4	Practical Lab
2	WBC- Turk solution preparation -WBC- counting by counting chamber- Manual counting advantages and disadvantages	8	Practical Lab
3	WBC- counting by blood cells analyzer - Automated method advantages and disadvantages	4	Practical Lab
4	WBC- absolute and relative count practical evaluation - lymphocytes in adult, infant and children WBC- laboratory evaluation of leukocytosis-leukocytopenia diagnosis - neutrophilia-neutropenia- lymphocytosis- lymphopenia. etc.	4	Practical Lab
5	WBC- Dilution counting WBC – blood film practical evaluation and report writing	8	Practical Lab
6	Blood films- slides show – report writing WBC- leukemia -Laboratory approach and	8	Practical Lab



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No.	Subject	Contact hours	Lab. Hospital, field
	evaluation - Acute myeloblastic leukemia (AML) - - Acute lymphoblastic leukemia (ALL) - Chronic myeloid leukemia (CML) - Leukemoid Reaction - Chronic Lymphocytic leukemia (CLL)		
7	Platelets normal morphology- reagent preparation Platelets counting by chamber- Manual counting advantages and disadvantages	4	Practical Lab
8	Platelets counting by blood cells analyzer - Automated method advantages and disadvantages Platelets observing and evaluation on the blood film -Thrombocytopenia- thrompocytosis	4	Practical Lab
9	Bleeding time practical evaluation Prothrombin time and INR practical evaluation Partial Thromboplastine Time (PTT) practical evaluation for hemophilia	8	Practical Lab
10	White blood cells – normal morphology in the peripheral blood	4	Practical Lab
11	WBC- Turk solution preparation -WBC- counting by counting chamber- Manual counting advantages and disadvantages	4	Practical Lab
12	WBC- counting by blood cells analyzer - Automated method advantages and disadvantages	4	Practical Lab
Total			64

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16



Learning resources:

References:

1. Baker, FJ, Silvertown RE. Introduction to Medical Laboratory Technology. 6th Edition. Butterworths and Co. 1985.
2. Cheesbrough M. District Laboratory Practice in Tropical Countries. Part 2. Cambridge University Press. 2000.
3. Fischbach F. A Manual of Laboratory and Diagnostic Tests. 4th Edition J.B. Lippincott Co. 1992.
4. Hall, Roger and Malia, Robert G. Medical Laboratory Hematology. Butterworths and Co. 1984.
5. Hayhoe, F.G.J. and Flemans R.J. A Color Atlas of Hematological Cytology. 3rd Edition Wolfe Publishing Ltd. 1992.
6. Henry JB. Clinical Diagnosis and Management by Laboratory Methods. 20th Edition. W.B. Saunders
7. Hoffbrand, AV, Pettit JE. Essential Hematology. 3rd Edition. Blackwell Science. 1993.
8. Koepke, John A. Laboratory Hematology. Churchill Livingstone. 1984.
9. Lewis SM, Bain BJ, Bates I. Dacie and Lewis Practical Hematology. 9th Edition. Churchill Livingstone 2002.
10. Linne JJ, Ringsrud KM. Clinical Laboratory Sciences. The Basics and Routine Techniques. 4th edition. Mosby, Inc. 1999.
11. Luzzatto, Lucio (Editor). Clinics in Hematology: Hematology in Tropical Areas. Volume 10 Number 3 W.B. Saunders Co. Ltd. 1981.
12. Raphael, Stanley S. Lynch's Medical Laboratory Technology. 4th Edition Igaku-Shoin/Saunders International Edition. 1983.
13. Ringsrud KM, Linne JJ. Urinalysis and Body Fluids. Mosby, Inc. 1995.
14. Robinson, SH, Reich PR. Hematology: Pathophysiologic Basis For Clinical Practice. 3rd Edition. Little, Brown and Company. 1993.
15. WHO Manual of Basic Techniques for a Health Laboratory. 1981
16. Wintrobe, Maxwell M. Clinical Hematology. 8th Edition. Lea and Febiger Philadelphia 1981.

Facilities Required:

- White board, computer, internet
- Data show
- Overhead projector
- Hand notes
- Lab content:
- Microscope –slides and cover slides- spectrophotometer
- Capillary tube –count chamber- syringes
- Giemsa stain – Drabkin – turk solution – methylene crystal blue- Dettol





Course Specification of Diagnostic Bacteriology

HIHS

1971



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظم ثلاث سنوات 2019

Basic Information

Course title:

Diagnostic Bacteriology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

5 Credit Hours

Code Number:

HS-LAB-224d

Course semester:

2nd year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulrahman Ali Zabad

Date of Specifications approval:





Professional Information

Course aims

This course describes the diagnosis of common pathogenic bacteria in clinical specimens, and it provides the essential skills for the isolation and identification of common pathogenic bacteria with consideration of antibiogram testing.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

1. Explain the possible pathogenic and commensal bacteria in clinical specimens.
2. Mention the diagnostic requirements for culturing each clinical specimen
3. Discuss the methods of identification of common pathogenic bacteria according specimen type.

Strategies of Teaching And Learning:

1. Advance Lecture.
2. Team work

Assessment & Evaluation Methods:

1. Short assay.
2. Multiple chooses Questions.

Strategies of Teaching And Learning:

- 1- Advance Lecture.

Assessment & Evaluation Methods:

- 1- Short Essay & Multiple chooses Questions.

B. Intellectual skills

1. Formulate a scheme of lab diagnosis for different clinical specimens.
2. Select the appropriates media for inoculation the different clinical specimens.

Strategies of Teaching And Learning:

- 1- Interactive group Discussion

Assessment & Evaluation Methods:

- 2- Evaluation of group discussion.

C. Professional& Practical skills

1. Perform collection, preparation and inoculation of clinical specimens.
2. Perform isolation and identification of common bacteria in clinical specimens.

Strategies of Teaching And Learning:

1. Practical lecture

Assessment & Evaluation Methods:



1. Practical exam

D. Transferable skills

- d.1. Communicate ideas effectively by written and oral means
d.2. Manage time effectively.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

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Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Diagnostic bacteriology overview: 1- Conventional and automated biochemical identification 2- Serotyping 3- Genotyping	1	Advance lecture
2	Upper respiratory tract infection (throat and mouth) 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
3	Nasopharyngeal aspiration, sinuses and nasal swabs 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
4	Infection of ears 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
5	Lower respiratory tract infection (LRT) 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Interactive group discussion.
6	Infection of eyes 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
7	Infection of gastrointestinal tract (GIT) 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
8	Mid exam	1	



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No.	Subject	Contact hours	Learning & teaching strategies
9	Infection of urinary tract (UT) 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Oral presentation.
10	infection of skin and soft tissue 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
11	<u>Purulent, exudate and pus</u> 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
12	<u>Infection of genital tract</u> 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Interactive group discussion.
13	<u>Infection of blood circulation</u> 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
14	<u>Infection of (CNS)</u> 1- Possible pathogens 2- Procedure of isolation 3- Identification and reporting	1	Advance lecture
15	Antibiotics Resistant	1	Interactive group discussion
Total			16



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2- Practical Subjects:

No.	Subject	Contact hours	Lab. Hospital. field
1	Introduction	8	Practical Lab
2	Analytical profile index API	8	Practical Lab
3	Throat and mouth swab for culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
4	Nasopharyngeal aspiration, sinuses and nasal swabs for culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
5	Ears swab for culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
6	Sputum and respiratory specimen culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
7	Eyes swabs for culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
8	Stool culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
9	Urine culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
10	Swab of skin and soft tissue for culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
11	Purulent, exudate and pus culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
12	High vaginal swab for culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
13	Urethral discharge for culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
14	Blood Culture First day: culture	8	Practical Lab



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No.	Subject	Contact hours	Lab. Hospital, field
	Second day: Isolation & Identification Antibiotics sensitivity		
15	Cerebrospinal fluid (CSF) Culture First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
16	Practical review of diagnostic bacteriology First day: culture Second day: Isolation & Identification Antibiotics sensitivity	8	Practical Lab
Total		128	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Cheesbrough Monica, 2006- District laboratory practice in tropical countries, part 2- 2nd edition- Cambridge university press.
2. W. Levinson -2010- Review of medical microbiology and immunology - 11th Edition - McGraw-Hill

Facilities Required:

- White board, computer, internet
- Data show
- Overhead projector
- Hand notes
- Microbiology Lab:
 - 1- Microscope
 - 2- Incubator



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- 3- Autoclave
- 4- Safety cabinet
- 5- Centrifuge
- 6- Bunsen burner and wire and plastic loop
- 7- Refrigerator
- 8- Candle jar
- 9- Glasses
- 10- Stains
- 11- Bacteriological media (Nutrient agar, Nutrient broth, Blood agar, MacConkey agar, Muller hinton agar)
- 12- Biochemical tests media and reagents (Catalase reagent, DNA-ase agar, Novobiocin disc, Bacitracin Disc, Optochin disc, Bile solubility reagent, Asculin medium, Triple sugar iron, Sulphur indole motility medium, Citrate agar, urease agar and oxidase test.
- 13- Antibiotics discs.

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Course Specification of Diagnostic Parasitology

HIHS
1971



Basic Information

Course title:

Diagnostic Parasitology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-2213c

Course semester:

2nd year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Tariq Al Hidabi

Date of Specifications approval:

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



Professional Information

Course aims

This course will provide the student with knowledge and skills on diagnostic Parasitology to enable the student of collection, preparation, and diagnosis of the different specimens by the proper techniques to enable him of diagnosis the different parasites accurately. Also, the student will be able to preparation, using, and storing of the solutions that used for diagnosis of parasites.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

1. Mention the specimens required to diagnose of the parasites.
2. Explain the solutions and methods that used in diagnosis of the parasites.
3. Discuss the principle of preparation methods.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

1. Select the site of specimens collection accuracy.
2. Choose the best methods to diagnose the parasites.
3. Predict the error sources in the diagnosis of parasites.
4. Differentiate between normal and abnormal stool specimens.

Strategies of Teaching And Learning:

- 1- Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

1. Collect the specimens of parasites accuracy.
2. Perform the macroscopic examination of stool specimens.
3. Prepare the Normal saline (0.9%) and Lugo's iodine (0.5%) accuracy.
4. Perform the different preparation methods of the parasites specimens.
5. Diagnose the different parasites.

Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam



D. Transferable skills

d.1. write the reports correctly.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

مستخرج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction to Diagnostic parasitology Types of specimens. normal & abnormal stool specimens.	1	Advanced lecture Interactive group discussion
2	Preparation of normal saline 0.9% definition. principle. using. storage.	1	Advanced lecture Interactive group discussion
3	Preparation of lugol's iodine 0.5% definition. principle. using. storage.	1	Advanced lecture Interactive group discussion
4	Wet preparation of stool specimen Definition. type of specimen. content of specimen. principle of preparation. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
5	Stool concentration method by normal saline 0.9 %) definition. type of specimen. content of specimen. principle of preparation. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
6	Stool concentration method by Formol-Ether definition. type of specimen. content of specimen. principle of preparation. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
7	Stool concentration method by Saturated normal saline definition.	1	Advanced lecture Interactive group discussion



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No.	Subject	Contact hours	Learning & teaching strategies
	type of specimen. content of specimen. principle of preparation. error sources of diagnosis.		
8	Midterm Exam	1	
9	occult blood test Definitions. type of specimen. principle of the test. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
10	Thick Blood Film Definitions. type of specimen. Principle. characters of the film. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
11	Thin Blood Film Definitions. type of specimen. Principle. characters of the film. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
12	Skin scraping test Definitions. type of specimen. Principle. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
13	Skin snip test Definitions. type of specimen. Principle. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
14	Urine sedimentation method Definitions. type of specimen. Principle. error sources of diagnosis.	2	Advanced lecture Interactive group discussion
15	Wet preparation of Vaginal discharge Definitions. type of specimen. Principle. error sources of diagnosis.	1	Advanced lecture Interactive group discussion
Total		16	



2- Practical Subjects:

N.	Subject	Contact hours	Lab. Hospital, field
1	Preparation of normal saline 0.9% equipments. procedures of preparation. storage.	4	Practical Lab.
2	Preparation of lugol's iodine 0.5% equipments. procedures of preparation. storage.	4	Practical Lab.
3	Wet preparation of stool specimen macroscopic examination. equipments. procedures of preparation. microscopic examination. report.	4	Practical Lab.
4	Stool concentration method by using of NaCl 0.9% macroscopic examination. equipments. procedures of preparation. microscopic examination. report.	4	Practical Lab.
5	Stool concentration method by using formol ether macroscopic examination. equipments. procedures of preparation. microscopic examination. report.	4	Practical Lab.
6	Stool concentration method by using saturated NaCl macroscopic examination. equipments. procedures of preparation. microscopic examination. report.	4	Practical Lab.
7	Stool Occult Blood Test equipments. procedures of test. reading, and writing the result.	4	Practical Lab.
8	Thick Blood Film equipments. procedures of preparation. staining. microscopic examination. report.	8	Practical Lab.
9	Thin Blood Film equipments.	12	Practical Lab.



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N.	Subject	Contact hours	Lab. Hospital, field
	Procedures of preparation. Staining. Microscopic examination. Report.		
10	Skin Scraping Test equipments. Procedures of preparation. Staining. Microscopic examination. Report.	4	Practical Lab.
11	Skin Snip Test equipments. Procedures of preparation. Staining. Microscopic examination. Report.	4	Practical Lab.
12	Urine sedimentation method equipments. procedures of preparation. microscopic examination. report.	4	Practical Lab.
13	Wet preparation of Vaginal discharge equipments. Procedures of preparation. Microscopic examination. report.	4	Practical Lab.
Total		64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16



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Learning resources:

References:

- 1 Cheesbrough Monica, 2005, District Laboratory Practice in Tropical Countries, Part 1, Cambridge University Press.
- 2 Peters Wallace & Pasvol Geoffrey, 2007, Atlas of Tropical Medicine and Parasitology, Sixth edition, Elsevier Mosby.

Facilities Required:

Instruments:

- Data show.
- Overhead projector.
- computer.
- Microscopes.
- Centrifuge.
- balance.

Solutions:

- Giemsa stain.
- Oil immersion
- Ethanol (70%)
- Methanol (98%)
- Hydrogen peroxide.
- formalin solution 10 %
- ether solution.
- Distilled water.

Materials:

- White board.
- Markers.
- Paper of overhead projector (translucent Papers)
- Microscopes slides & cover slides.
- Cotton.
- Gauze.
- Funnel.
- Timer.
- Pipettes(5ml,10ml)
- Stopper.
- Sterile lancet or Syringe.
- Salt.
- Iodine.
- Potassium iodide- stool containers.
- Pyrex tubes.
- tubes racks.
- Slides racks
- Test tube with E.D.T.A
- Filter papers.
- Flasks & cylinders.
- Brown bottles
- glass Applicators.
- Pasteur pipettes.
- strips of occult blood test.





Course Specification of Blood banking II

HIHS
1971



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information:

Course title:

Blood banking II

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

3 Credit Hours

Code Number:

HS-LAB-2215b

Course semester:

2nd year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

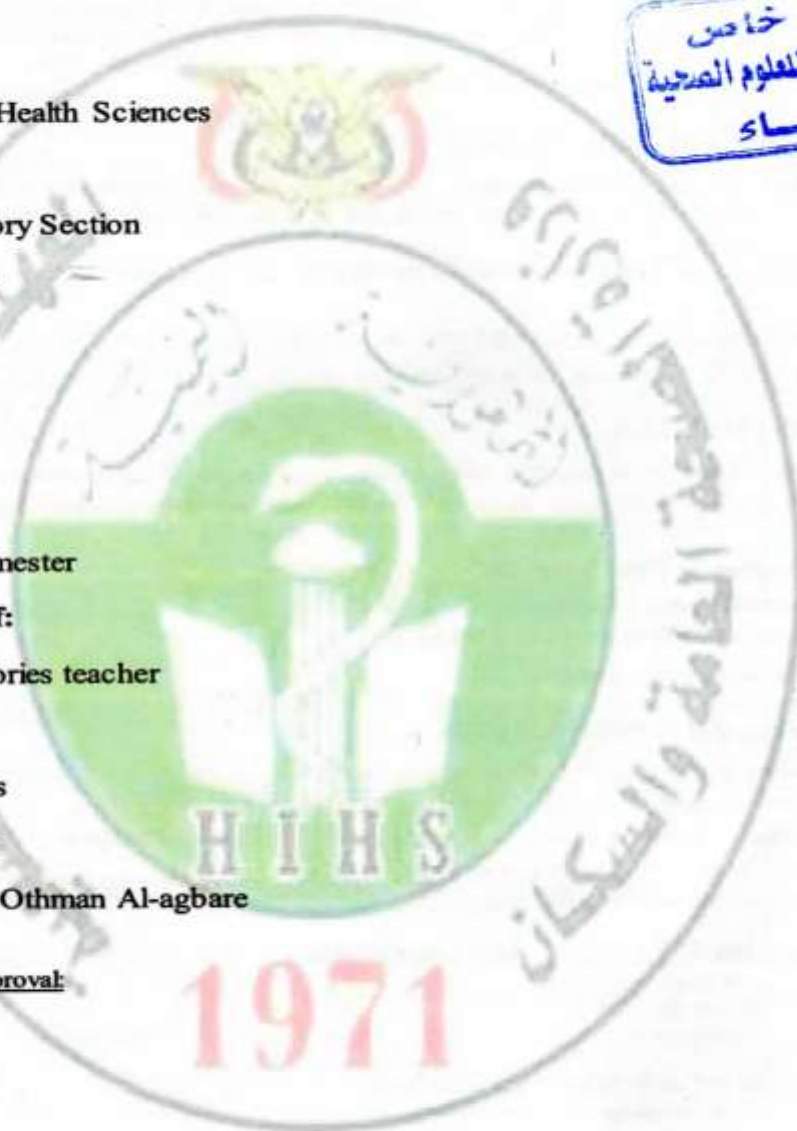
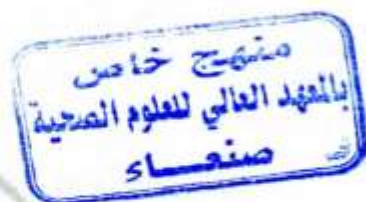
Language used:

English languages

Course coordinator:

Dr. Abdulrazzaq Othman Al-agbare

Date of Specifications approval:





Professional Information

Course aims

This course aim to provides the Laboratory undergraduate student with basic knowledge about the blood banking, blood donation, selection of blood donors, tests which required before blood donation and the cross matching tests, to help him to understand the importance of blood banking and to provides high and correct service of blood transfusion in the blood banks or in the blood centers

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Mention what is blood donation, types of blood donors, importance of blood donation
- a.2. Understand the risks of blood transfusion, and the importance of compatibility tests

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Discuss the blood donation types, donors selection and the importance of donors screening tests
- b.2. Explain the cross match types, blood transfusion reactions and their importance

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

At the end of this Course the student will be able to

- c.1. Collect Blood from donors and Samples for Blood Banking Tests
- c.2. Perform Donor Screening tests, compatibility tests (direct antiglobulin test "or DAT, Indirect antiglobulin tests (IAT) and report the result of cross matching
- c.3. Prepare the washed RBC unit etc.

Strategies of Teaching And Learning:

1. Lab application test
2. Group discussion
3. Presentation

Assessment & Evaluation Methods:

1. Practical exam
2. Observation



D. Transferable skills

- d.1. Organize and set-up a laboratory of health establishment.
- d.2. Keeps proper way of records and Prepare monthly and annual report writing.
- d.3. Read and write scientific reports and present them to others in group discussion and Work in group team.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion

Oral presentation evaluation

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Blood Bank versus Blood Center Blood Donation Health check before donating blood Goals of Donors screening donor selection	2	Advance lecture
2	Deferral persons permanents and short time Types of blood donors. Autologous blood donation Collection of Blood Potential Hazards During and after Blood Collection	2	Advance lecture
3	Frequency of donation Blood transfusion- RBC Anticoagulant/Preservative Solutions	1	Advance lecture
4	Blood components Blood storage and blood components life span Apheresis of whole blood	1	Advance lecture
5	• Red cell concentrates (RCC), ("packed red blood cells" (PRBCs). • Frozen-thawed red cells • Washed Red Blood Cells	1	Advance lecture
6	MIDTERM EXAM	1	
7	Types of platelet products • Platelet concentrates (PC) • Pooled platelets • Apheresis platelets	1	Advance lecture
8	Plasma Product • Fresh frozen plasma • Frozen plasma • Stored plasma	1	Advance lecture



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No.	Subject	Contact hours	Learning & teaching strategies
9	pretransfusion testing for recipients of blood products Basic reactions in blood banking	1	Advance lecture
10	Cross matching - Coomb's procedures Types of Cross-Match --Purpose of Cross-Match Selection of Blood for Cross-Match	2	Advance lecture
11	Auto Immune Hemolytic Anemia (AIH) Hemolytic Disease of the New Born (HDN)	1	Advance lecture
12	Types of Transfusion Reaction Laboratory Tests to be Done When Transfusion Reaction Occurs	1	Advance lecture
13	General Revision	1	Advance lecture
Total		16	

2- Practical Subjects:

No.	Subject	Contact hours	Lab. Hospital, field
1	Donor selection Selection Criteria: Health check before donating blood Deferral persons permanent and short time Types of blood donors.	4	Theoretical
2	1. TESTING DONOR BLOOD a. Donor's ABO and Rh type b. Antibodies to HIV, HCV, HTLV, HBe. c. Ag for HIV, Hep B, West Nile virus. d. Negative for syphilis	8	Practical Lab
3	BLOOD COLLECTION- Technique of collecting blood from a donor The Anticoagulants -ACD - CPD- CPD-A Registration	8	Practical Lab
4	1. STORAGE OF BLOOD 2. Mobile blood donation and transportation of blood	8	Field training - into the central blood bank
5	Apheresis of plasma RBC Apheresis of plasma from RBC	8	Practical Lab
6	Types of cross matches a) Coomb's test b) Urgent Cross Matching c) Routine Cross Matching d) Detection of Antibodies e) Electronic crossmatch	12	Practical Lab
7	Types of Transfusion Reaction Laboratory Tests to be Done When Transfusion Reaction Occurs	4	Practical Lab
8	Assessment of HDN Prenatal	4	Practical Lab



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No.	Subject	Contact hours	Lab. Hospital, field
	Postnatal		
9	QUALITY ASSURANCE IN BLOOD TRANSFUSION PRACTICE a) Patient Identification b) Labeling of Sample c) Mislabeled Samples d) Potential Hazards During & after Blood e) Collection f) Collection Different cross matching tests errors. g) Quality control of reagents- ABO and Rh antisera and AHG h) Quality control of equipment:	8	Practical Lab
	Total	64	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Benjamini E, Coico R, sunshine G. Immunology A short Course, 4th ed. Wiley Liss, 2000.
2. Boorman Kathleen E, Dodd Barbara E, Lincoln P.J. Blood Group Serology, 6th ed. Churchill Livingstone, UK, 1988.
3. Bryant Neville J An Introduction to Immunohematology, 3rd ed. Philadelphia, WB saunders, 1994.
4. Chees brough Monica. District Laboratory practice in Tropical countries, Part 2. Cambridge, UK, 2000.
5. Estridge BH, Reynolds AP, Walters NJ. Basic Medical Laboratory Techniques, 4th ed. Delmar, 2000.
6. Linne JJ, Ringsrud KM. Clinical Laboratory science: The Basics and Routine Techniques, 4th ed. Mosby, 1999.



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

7. Louise Mary Turgeon. Fundamentals of Immunohematology, Theory and Technique. 2nd ed. Williams and Wilkins, New York, 1995.
8. McClelland DBL. Hand book of transfusion medicine, 3rd ed. The stationery office, London, 2001.
9. Tibebu M, The Blood Bank Manual, Ethiopian Red cross society, National Blood Transfusion Service, Addis Benjamini E, Coico R, sunshine G. Immunology A short Course, 4th ed. Wiley Liss, 2000.
10. Boorman Kathleen E, Dodd Barbara E, Lincoln P.J. Blood Group Serology, 6th ed. Churchill Livingstone, UK, 1988.
11. Bryant Neville J An Introduction to Immunohematology, 3rd ed. Philadelphia, WB saunders, 1994.
12. Cheesbrough Monica. District Laboratory practice in Tropical countries, Part 2. Cambridge, UK, 2000.
13. Estridge BH, Reynolds AP, Walters NJ. Basic Medical Laboratory Techniques, 4th ed. Delmar, 2000.
14. Linne JJ, Ringsrud KM. Clinical Laboratory science: The Basics and Routine Techniques, 4th ed. Mosby, 1999.
15. Louise Mary Turgeon. Fundamentals of Immunohematology, Theory and Technique. 2nd ed. Williams and Wilkins, New York, 1995.
16. McClelland DBL. Hand book of transfusion medicine, 3rd ed. The stationery office, London, 2001.
17. Tibebu M, The Blood Bank Manual, Ethiopian Red cross society, National Blood Transfusion Service, Addis
18. **MANUAL OF BASIC TECHNIQUES** Second edition, World Health Organization, Geneva, 2003
19. Lewis SM, Bain BJ, Bates I. **Practical haematology**, 9th Edition, 2001. Churchill Livingstone, Elsevier.
20. Provan D et al. **Oxford handbook of clinical haematology**, 2nd edition, 2004. Oxford University Press

Facilities Required:

- White board, computer, internet
- Data show
- Overhead projector
- Hand notes
- Lab content:
 - Centrifuge – water bath-syringes

Normal saline – ABO blood group – Rh- anti-D- albumin- Bovine albumin – Coomb's test II reagen



منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Course Specification of Virology

HIHS

1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Virology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-2217

Course semester:

2nd year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulrahman Ali Zabad

Date of Specifications approval:



Professional Information

Course aims

This course describes the viruses structure, classification, replication and how common viruses transmit, cause disease and provides the basic skills of laboratory diagnosis of some common viruses.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- Explain the properties of common viruses, mode of replication and classification.
- Discuss the transmission, diseases and laboratory diagnosis of common viruses.
- Mention the methods of sample collection and laboratory diagnosis of viral specimens.

Strategies of Teaching And Learning:

- Advance lecture

Assessment & Evaluation Methods:

- Short Essay & Multiple chooses Questions.

B. Intellectual skills

- Select appropriate specimens, requirements and methods for viral diagnostic tests.
- Distinguish between different viruses according to their properties and diseases.

Strategies of Teaching And Learning:

- Interactive group Discussion

Assessment & Evaluation Methods:

- Group discussion evaluation

C. Professional & Practical skills

- Perform collection, transport and processing of clinical viral specimens for different diagnostic techniques.
- Perform serological latex Antigen-Antibody detection, device chromatography tests, and ELISA technique for detection of common viruses.

Strategies of Teaching And Learning:

- Practical Lab

Assessment & Evaluation Methods:

- Practical exam

D. Transferable skills

- Communicate effectively by written and oral means.
- Manage time effectively.

Strategies of Teaching And Learning:

- Interactive group discussion
- Oral presentation

منهج خاص
المعهد العالي للعلوم الصحية
صنعاء



Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation

Curriculum structure and contents of the program

1- Theory Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	General properties of viruses: 1- Terms and Definition 2- Virus structure. 3- Classification of medically important viruses	1	Advance lecture
2	Viruses replication and pathogenesis: 1- General steps in viral replication cycle 2- Transmission of viral diseases 3- Pathogenesis of viruses	1	Advance lecture
3	Samples collection for virology tests: 1- Specimens collection of viral diseases 2- Transport of viral specimens 3- Processing of viral specimens	1	Advance lecture
4	Laboratory diagnosis of viruses: 1- Culturing of viruses 2- Detection of viral antigens and antibodies 3- Seroconversion; Acute phase and convalescent phase 4- Detection of viral nucleic acid	1	Advance lecture
5	DNA enveloped viruses: Important properties, diseases and laboratory diagnosis of 1- Herpes simplex virus and varicella –zoster virus 2- Cytomegalovirus 3- Epstein-Barr virus 4- Smallpox virus	1	Advance lecture
6	DNA non enveloped viruses: Important properties, diseases and laboratory diagnosis of: 1- B19 virus 2- Human papilloma virus 3- Adenovirus	1	Advance lecture
7	RNA non enveloped viruses: Important properties, diseases and laboratory diagnosis of: 1- Poliovirus 2- Rhinovirus virus 3- Rotavirus and Norwalk virus	1	Interactive group discussion.
8	Midterm Exam	1	
9	RNA enveloped viruses:	1	Advance lecture



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

No.	Subject	Contact hours	Learning & teaching strategies
	Important properties, diseases and laboratory diagnosis of: 1- Rubella virus 2- Measles virus 3- Mumps virus and Respiratory syncytial virus		
10	RNA enveloped viruses: Important properties, diseases and laboratory diagnosis of: 1- Influenza A, B, and C viruses 2- Parainfluenza viruses 3- Coronavirus	1	Advance lecture
11	RNA enveloped viruses: Important properties, diseases and laboratory diagnosis of: 1- Dengue virus 2- Ebola virus, Marburg virus, Yellow fever virus, West Nile virus	1	Advance lecture
12	Hepatitis B virus: 1- Important properties 2- Pathogenesis 3- Laboratory diagnosis	1	Interactive group discussion.
13	Hepatitis viruses: Important properties, diseases and laboratory diagnosis of: 1- Hepatitis C Virus 2- Hepatitis A Virus 3- Other hepatitis viruses	1	Advance lecture
14	Human Immunodeficiency Virus: 1- Disease and Important Properties 2- Transmission & Epidemiology 3- Pathogenesis 4- Laboratory Diagnosis	1	Advance lecture
15	Antigen and antibodies detections: Principles of latex, device chromatography Complement fixation, hemagglutination and Immunofluorescence methods for viral diagnosis	1	Oral presentation.
16	ELISA: Principles of enzyme linked immunosorbent assay for viral diagnosis	1	Advance lecture
Total		16	

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

2- Practical Subjects:

No.	Subject	Contact hours	Lab. Hospital, field
1	Intro duction to virology lab	2	Practical Lab
2	Specimens collection, transport and processing	2	Practical Lab
3	Latex agglutination test for the detection of Hepatitis B (HBs Ag)	2	Practical Lab
4	Immunochromatography (Device) test for the detection of (HBs Ag)	2	Practical Lab
5	Enzyme-Linked Immunosorbent Assay (ELISA) test for the detection of HBsAg	2	Practical Lab
6	Enzyme-Linked Immunosorbent Assay (ELISA) test for the detection of (HCV)	2	Practical Lab
7	Enzyme-Linked Immunosorbent Assay (ELISA) test for the detection of IgM antibodies to Rubella	2	Practical Lab
8	Enzyme Linked immunosorbent assay (ELISA) for detection of IgM antibodies to CMV in serum	2	Practical Lab
9	Midterm Exam	2	
10	Enzyme Linked immunosorbent assay (ELISA) for detection of IgG antibodies to CMV in serum	2	Practical Lab
11	Immunochromatography (Device) test for the detection of (HIV)	2	Practical Lab
12	Enzyme-Linked Immunosorbent Assay (ELISA) tests for the detection of antibodies to HIV-1 and HIV-2)	2	Practical Lab
13	Enzyme-Linked Immunosorbent Assay (ELISA) test for the detection of Dengue virus	2	Practical Lab
14	Safety practices in handling of high risk viruses	2	Practical Lab
15	Review	2	Practical Lab
16	Final Exam	2	
Total		32	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

- 1- W. Levinson -2010- Review of medical microbiology and immunology - 11th Edition - McGraw-Hill
- 2- Jawetz, melnick & adleberg's- 2010- Medical microbiology- 25th Edition- McGraw-Hill

Facilities Required:

- Lecture hall, Computer, Data show
- Immunology and Virology laboratory:
 1. ELISA instrument
 2. ELISA kits
 3. Centrifuge
 4. Pipettes
 5. Shaker
 6. Chromatography devices
 7. Latex reagents
 8. Wooden applicator
 9. Cards
 10. Refrigerator
 11. Gloves
 12. stopwatches.





Course Specification of Mycology

HIHS
1971



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Mycology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-2218

Course semester:

2nd year – 2nd Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Abdulrahman Ali Zabad

Date of Specifications approval:





Professional Information

Course aims

This course describes the fungal structure, classification, multiplication, transmission, diseases and provides the basic skills of specimens collection and direct examination of common fungi in laboratory.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- Explain the fungal cell structure, multiplication and classification of fungi.
- Mention the properties, transmission and diseases of common fungi.
- Discuss the methods of sample collection and laboratory diagnosis of fungal specimens.

Strategies of Teaching And Learning:

- Advance lecture

Assessment & Evaluation Methods:

- Short Essay & Multiple chooses Questions.

B. Intellectual skills

- Differentiate between different fungi according to their properties and diseases.
- Select appropriate specimens, requirements and methods for mycology diagnosis.

Strategies of Teaching And Learning:

- Interactive group Discussion
- Oral presentation

Assessment & Evaluation Methods:

- Evaluation of group discussion.

C. Professional & Practical skills

- Perform collection, transport and processing of clinical fungal specimens.
- Perform direct examination of hair, skin nail scraping.
- Perform the laboratory diagnosis of Candidiasis.

Strategies of Teaching And Learning:

- Practical lecture

Assessment & Evaluation Methods:

- Practical exam

D. Transferable skills

- Communicate ideas effectively by written and oral means.
- Manage time effectively.

Strategies of Teaching And Learning:

- Interactive group discussion
- Oral presentation



Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

1– Theory Subjects:

منهج خاضع
بالمعهد العالي للعلوم الصحية
صنعاء

No.	Subject	Contact hours	Learning & teaching strategies
1	General properties of fungi: - Terms and definition - Fungal cell structure - Classification of medically important fungi	1	Advance lecture
2	General properties of fungi: - Nutrition and habitat - Mode of fungal growth - Sexual and asexual sporulation	1	Advance lecture
3	Laboratory diagnosis of fungi: Collection and transport of the following specimens: - Skin, nails and hair - Mucous membrane, Ear and Eye specimen - Blood and body fluid specimen - Tissue and bone marrow	1	Advance lecture
4	Laboratory diagnosis of fungi: - Microscopic examination of fungi - Fungal culture - Serological tests	2	Advance lecture
5	Superficial fungi: Characteristics, disease and laboratory diagnosis of the following: - Piedra hortae and Trichosporon beigellii - Exophiala wernneckii - Malassezia furfur	1	Interactive group discussion.
6	Cutaneous fungi: Characteristics, disease and laboratory diagnosis of Dermatophytes: - Trichophyton - Microsporum - Epidermophyton	2	Advance lecture
7	Subcutaneous fungi: Disease, characteristics and laboratory diagnosis of the following: - Sporothrix schenckii - Chromoblastomycosis agents (Cladosporium carrionii, Fonsecaea pedrosi and phialophora verrucosa) - Eumycetoma agents	1	Advance lecture



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

No.	Subject	Contact hours	Learning & teaching strategies
8	Midterm exam	1	
9	Systemic opportunistic fungi: Characteristics, diseases and laboratory diagnosis and treatment of <i>Candida</i> species	2	Oral presentation.
10	Systemic opportunistic fungi: Characteristics, diseases and laboratory diagnosis of the following: - <i>Cryptococcus neoformans</i> - <i>Aspergillus</i> species - <i>Mucor</i> , <i>Rhizopus</i>	1	Advance lecture
11	Systemic True pathogens dimorphic fungi: Characteristics, diseases and laboratory diagnosis of the following: - <i>Histoplasma capsulatum</i> - <i>Blastomyces dermatitidis</i> - <i>Coccidioides immitis</i> - <i>Paracoccidioides brasiliensis</i>	1	Advance lecture
12	Biosafety considerations: - Biosafety cabinets - Precautions to take in handling of fungal specimens - Disinfectant and waste disposal	1	Interactive group discussion.
13	Antifungal susceptibility test: - Principle - Procedure - Common antifungal - MIC and its clinical important	1	Advance lecture
Total			16

2- Practical Subjects:

No.	Subject	Contact hours	Lab. Hospital, field
1	Collection and transport of the Mucous membrane, Ear and Eye specimen - Blood and body fluid specimen - Tissue and bone marrow specimens	2	Practical Lab
2	Skin scraping for fungal examination	2	Practical Lab
3	Nail scraping for fungal examination	2	Practical Lab
4	Hair scraping for fungal examination	2	Practical Lab
5	Sabouraud dextrose agar (SDA) preparation	2	Practical Lab
6	Corn meal agar preparation	2	Practical Lab
7	Preparations of potassium hydroxide and lactophenol-cotton blue stain	2	Practical Lab



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No.	Subject	Contact hours	Lab. Hospital, field
8	Midterm examination	2	Practical Lab
9	Laboratory examinations of dermatophytes	2	Practical Lab
10	Laboratory examinations of mycetoma	2	Practical Lab
11	Laboratory examinations of candida infection	2	Practical Lab
12	Germ tube examination	2	Practical Lab
13	Laboratory examinations of Cryptococcus neoformans	2	Practical Lab
14	Laboratory diagnosis of systemic mycosis	2	Practical Lab
15	Antifungal susceptibility testing procedure	2	Practical Lab
16	Antifungal susceptibility reporting of test	2	Practical Lab
Total		32	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work 4 th week
2	Participation 6 th week
3	Midterm exam 8 th week
4	Attendance 15 th week
5	Final term exam 16 th week

Learning resources:

References:

1. W. Levinson -2010- Review of medical microbiology and immunology - 11th Edition - McGraw-Hill
2. Jawetz, Melnick & adleberg's- 2010- Medical microbiology- 25th Edition- McGraw-Hill

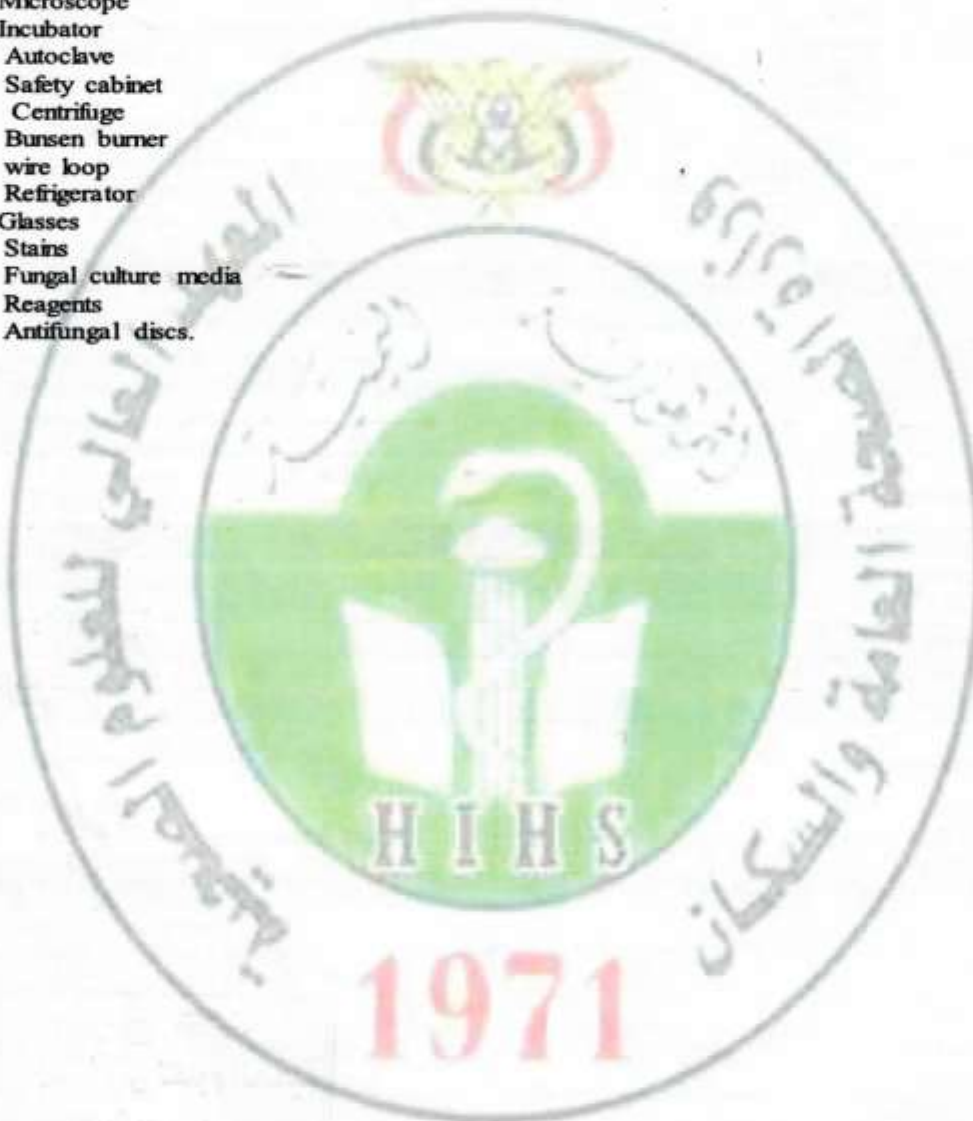
1971





Facilities Required:

- White board, computer, internet, Data show, Hand notes
- Microbiology Lab:
 - Microscope
 - Incubator
 - Autoclave
 - Safety cabinet
 - Centrifuge
 - Bunsen burner
 - wire loop
 - Refrigerator
 - Glasses
 - Stains
 - Fungal culture media
 - Reagents
 - Antifungal discs.





منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

October
2019

Courses Specification

Third Year – First Semester

HIHS

1971



Course Specification of Quality control

HIHS

1971



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Basic Information

Course title:

Quality control

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

2 Credit Hours

Code Number:

HS-LAB-3119

Course semester:

3rd year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Helal Ali

Date of Specifications approval:

صنعت خاص
المعهد العالي للعلوم الصحية
صنعاء



Professional Information

Course aims

At the end of this course the student should be able to:

Understand the concept and purposes of Quality control and Quality Assurance, identify the source of errors in his work, discuss how to control the instruments, tests, results, and all his writing work inside the lab, describe the concept of accuracy and precision, determine the sensitivity, specificity and reproducibility of an assay.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Explain the Quality control and Quality Assurance.
- a.2. Describe the pre-analytical, analytical and post-analytical.
- a.3. Enumerate the laboratory tests and factors affected
- a.4. Explain the Accuracy and precision.
- a.5. Describe the sensitivity and specificity.
- a.6. Explain the variation of errors in the laboratory.
- a.7. Discuss the total laboratory management.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Differentiate between the Quality control and Quality Assurance.
- b.2. Differentiate between the variation of specimens collection.
- b.3. Select the best of Equipment and reagents.
- b.4. Differentiate between the sequence of laboratory errors.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Calculation the sensitivity and specificity.
- c.2. Calculation the Accuracy and precision.
- c.3. Unites used and accepted reference rang.
- c.4. Action to take in abnormal results.



Strategies of Teaching And Learning:

1. Practical Lab

Assessment & Evaluation Methods:

1. Practical exam

D. Transferable skills

- d.1. Record the results
- d.2. Interpretation the results
- d.3. Reporting the results.
- d.4. Rapidly send the results.

Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction Definition- Importance- Goals	1	Advanced lectures
2	Accuracy Definition – Examples- Calculation Precision Definition –Examples- Calculation	2	Advanced lectures Interactive group Discussion Presentation (data show)
3	Reproducibility Definition –Examples-Importance-Calculation Specificity Definition –Examples-Importance- Calculation	2	Advanced Lectures Interactive Group Discussion
4	Sensitivity Definition –Examples - Importance- Calculation Reliability & Validation Definition- Examples True value, Correct value & Normal value Definition- Examples	2	Advanced Lectures Interactive Group Discussion
5	Laboratory Errors Definition- Types- Causes- Consequence- Preventing	1	Advanced Lectures Interactive Group Discussion
6	Laboratory tests Definition- Types- Factors that influence Measurements	1	Interactive group Discussion



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

No.	Subject	Contact hours	Learning & teaching strategies
	Definition-Types		
7	Methods of QA and QC Pre-analytical- Analytical - Post-analytical	4	Advanced Lectures Interactive Group Discussion
8	Total quality management Definition- Importance - Goal – Requirements- Applications	3	Advanced Lectures Interactive Group Discussion
Total		16	

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Course Notes; Introduction to Quality Control & Q. Assurance (2011)
2. Laboratory Quality Assurance and Quality Control Guidance Reasonable Confidence Protocols (2010), Amey Marella.
- 3- Quality Assurance plan central analytical Laboratory, NADP QA Plan (2009).
- 4- District Laboratory Practice in Tropical Countries, Part -1; Second Edition Monica Cheesbrough (1998, 2005, 2009).

Facilities Required:

- White board
- Markers
- Data show
- Overhead projector



منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Course Specification of Research methodology

HIHS
1971

Basic Information

Course title:

Research methodology

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

1 Credit Hours

Code Number:

HS-LAB-3120

Course semester:

3rd year – 1st Semester

Course teaching staff:

Teacher has experience related to researches.

Language used:

Arabic - English language

Course coordinator:

T. Seham Othman



Professional Information

Course aims

At the end of the course, the student should be able to prepare proposal steps in correctly way.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding:

- a.1. Describe characteristics of title of research.
- a.2. Discusses the types of researches.
- a.3. Explain the benefits of literature review.
- a.4. Mention the characteristics of objectives.
- a.5. Describe the methodology of research.
- a.6. Explain the ways of references writing.

Strategies of Teaching And Learning:

1. Advance lecture

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Recognize the different between the types of study designs.
- b.2. Correlate between the problem of research and priorities of public health and population ministry.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Prepare the research proposal

Strategies of Teaching And Learning:

1. Group work.

Assessment & Evaluation Methods:

1. Group assignment.

D. Transferable skills

- d.1. Work with research team

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion
2. Oral presentation evaluation.

Curriculum structure and contents of the program

1- Theoretical Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction to research.	1	Advance lecture and interactive group discussions
2	Ethics in health research	1	Advance lecture and interactive group discussions
3	Types of researches	1	Advance lecture and interactive group discussions
4	Research title.	1	Advance lecture and interactive group discussions
5	Research question & problem statement.	2	Advance lecture and interactive group discussions
6	Literature Review.		Advance lecture and interactive group discussions
7	Study objectives.	1	Advance lecture and interactive group discussions
8	Variables.	1	Advance lecture and interactive group discussions
9	Study Designs (Introduction)	1	Advance lecture and interactive group discussions
10	Non-interventional studies.	1	Advance lecture and interactive group discussions
11	Interventional studies	1	Advance lecture and interactive group discussions
12	Sample types & sampling technique.	2	Advance lecture and interactive group discussions
13	Sample size determination, tools & data analysis.	1	Advance lecture and interactive group discussions
14	Work plan & budget.	1	Advance lecture and interactive group discussions
15	Proposal writing (Theory)	1	Advance lecture and interactive group discussions
	Total	16	



المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

Evaluation of course

No.	Evaluator Method	Percentage
1	Semester work	-
2	Participation	10%
3	Attendance	10%
4	Midterm exam	20%
5	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

- Course Notes
- Department books
- Essential Books (Text Books)

Polit D, & Beck C: (2014) Essentials Nursing Research, Appraising Evidence for Nursing Practice .8th edition, Wolters Kluwer Health, Lippincott Williams & Wilks.

Recommended Books:

- الصائع محمد: مهارات إعداد وإنجاز الأبحاث العلمية والتربوية والرسائل الجامعية دار جامعة نمار للطباعة والنشر 2008م، الطبعة الثانية.

- Periodicals, Web Sites, ... etc.

1. PubMed - Medline- WHO- UNICEF.

Facilities Required:

- Computers and data show.

مفهد خاص
المعهد العالي للعلوم الصحية
صنعاء



المقرر التخصصي في الإحصاء الصحي
Health Statistics

HIHS
1971



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

أولاً: البيانات الأساسية

اسم المؤسسة التعليمية التي تقدم البرنامج:

المعاهد العليا للعلوم الصحية وفروعها

القسم الذي يقدم البرنامج:

المختبرات الطبية

اسم المقرر:

الإحصاء الصحي (Health Statistics)

كود المقرر:

HS-LAB-3121

الساعات المعتمدة:

ساعة واحدة معتمدة

ساعة واحدة نظري (16 ساعة فعلية)

السنة الدراسية التي يعطى فيها المقرر:

السنة الثالثة - الفصل الدراسي الأول.

أعضاء هيئة التدريس المسئولون عن تدريس المقرر:

مختصين في الإحصاء

اللغة المستخدمة في تدريس المقرر:

اللغة العربية

اسم معد/معدو توصيف المقرر:

أ/ صالح صالح





المعهد العالي للعلوم الصحية - منهد المختبرات الطبية نظام ثلاث سنوات 2019

ثانياً: البيانات المهنية

أهداف المقرر:

يحتوي المقرر على حزمة من الأسس المعرفية و المهاريّة التي تمكن الطالب الإمام بالمفاهيم الأساسية لعلم الإحصاء وتجعله قادراً على التعامل مع البيانات (جمع وتصنيف وتبويب وعرض) للاستفادة منها في اتخاذ القرار، وكذلك الاستفادة من خطوات مراحل العملية الإحصائية كأساس للبحث العلمي.

مخرجات التعلم المرجوة

- 1- المعرفة والفهم:
 1. التعرف على المبادئ الأساسية لعلم الإحصاء.
 2. التعرف على خطوات البحث العلمي.
 3. التعامل مع البيانات (جمع وتبويب وعرض البيانات).
 4. استخدام المقاييس الوصفية.
 5. التعرف على المؤشرات والمعدلات الحيوية.

استراتيجيات التعلم والتعليم المستخدمة لتحقيق المعرفة والفهم:

- 1- المحاضرة المطورة.
- 2- مجموعات لحل التمارين.

أساليب التقييم المستخدمة لتقييم المعرفة والفهم:

- 1- حل تمارين.
 - 2- أسئلة مقالیه صغيرة.
- ب- المهارات الذهنية:
لا يوجد
- ت- المهارات العملية:
لا يوجد
- ث- المهارات الانتقالية:
لا يوجد

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المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

محتوى المقرر
1. المواضيع النظرية:

الوحدة	المفردات	عدد الساعات	استراتيجية التعلم والتعليم
1	مقدمة في علم الإحصاء	1	محاضرو مطورة مجموعه نقاش
2	مراحل العملية الإحصائية - وظائف علم الإحصاء	1	محاضرو مطورة
3	مصادر جمع البيانات وأساليب جمع البيانات: مصادر تاريخية - ميدانية أسلوب الحصر الشامل وأساليب العينة الإحصائية	1	محاضرو مطورة مجموعه نقاش
4	طرق جمع البيانات: الاستبيان والمقابلة والملاحظة	1	محاضرو مطورة مجموعه نقاش
5	تصنيف وتفرغ البيانات: أنواع المتغيرات (كمية وصفية) وكيفية تفرغ البيانات	2	محاضرو مطورة مجموعه نقاش
6	عرض البيانات: عرض جدولي - وعرض بياني	2	محاضرو مطورة مجموعه نقاش
7	مقاييس النزعة المركزي: الوسط الحسابي - الوسيط - المتوال	2	حل مسائل
8	مقاييس التشتت: المدى - الانحراف المعياري - والتباين	2	حل مسائل
9	المؤشرات الصحية: تعريف المؤشر - أهمية المؤشرات - خصائص المؤشر - معايير اختيار المؤشر	1	محاضرو مطورة مجموعه نقاش
10	مقدمة في علم الإحصاء الحيوي: التعريف - الأهداف - معدل المواليد الخام - معدل المواليد الموتي وغيرها	1	محاضرو مطورة حل مسائل
11	معدلات الوفيات: معدل الوفيات الخام - معدل وفيات الأمهات - معدل وفيات الرضع - معدل وفيات حديثي الولادة - معدل الإسقاط	1	محاضرو مطورة حل مسائل
12	معدلات الخصوبة والمرضات: معدل الخصوبة العام وحسب العمر - معدل الإصابة ومعدل الانتشار - ومعدل الشفاء ومعدل الهلاك	1	محاضرو مطورة حل مسائل
16	المجموع		

تقييم الطلاب:

إجراء اختبارات قصيرة شفوية وتحريرية لتأكد من مدى تحقق الأهداف المعرفية بالإضافة إلى إعطائهم بعض التكاليف بالأسبوع الأخير
أجراء امتحان نهائي لتقسيم مهاراتهم لتأكد من مدى تحقق كافة الأهداف.

أساليب التقييم المستخدمة:

1. أسئلة متعددة الخيارات
2. أسئلة مقالته قصيرة
3. أسئلة صح وخطأ
4. أملا الفراغات
5. أسئلة المزاجية

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء



المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

نموذج التقييم:

الرقم	طرق التقييم	درجة التقييم
1	تعليم تشاركي (حلقت نقاش مع عروض تقديمية)	10
2	اختبار نظري - دوري	10
3	اختبار نظري نصفي	20
4	اختبار نظري نهائي	60
	المجموع	100

* يفضل تنفيذ الامتحانات الدورية قبل وبعد الامتحان النصفي وتقسّم الدرجة عليهما.

جدول التقييم:

الرقم	موعد التقييم
1	الاسبوع الرابع اعمال فصل
2	الاسبوع السادس مشاركة
3	الاسبوع الثامن الامتحان النصفي
4	الاسبوع السادس عشر الامتحان النهائي

* يفضل تحديد الامتحانات لجميع المقررات عبر القسم التعليمي وبمواعيد مطّنة للطلاب.

مصادر التعلم:

المراجع:

1. د / أمجد ابراهيم شحاده وآخرون (الأحصاء والاحتمالات في التطبيقات الهندسية)، دار الفجر للنشر والتوزيع.
2. د/ سليم ذيلب السعدي (مبادئ علم الأحصاء)، دار الكتاب الجديدة، بيروت - لبنان، الطبعة الأولى.
3. د/ محمود عبده حسن محمد العززي (الأحصاء في العلوم الطبية)، 2011م، الطبعة الأولى.
4. / نائد سلطان المشرقي، مبادئ علم الأحصاء، المعهد الوطني للعلوم الأثرية.
5. كتب طب المجتمع، أعداد نخبة من اساتذة الجامعات العربية.

الإنترنت

1. المفاهيم الأساسية لعلم الأحصاء، معهد التدريب والدراسات العربية
2. المؤلف / أحمد عبد السميع طيه (علم الأحصاء) رابط التحميل من موقع Archive، الطبعة الأولى 2008م، دار البداية، عمان.
3. المؤلف / جلال الدين الصياد، عبد الحميد محمد ربيع (مبادئ الطرق الإحصائية) رابط التحميل من موقع Archive، تاريخ الإضافة 20 / 3 / 2009م، دار البداية، عمان.
4. المؤلف / عبد العزيز فهمي هيكل (مبادئ الأساليب الإحصائية) رابط التحميل من موقع Archive، تاريخ الإضافة 20 / 3 / 2008م، دار البداية، عمان.

التسهيلات والإمكانات اللازمة للتعليم والتعلم:

6. قاعات دراسية
7. داتا شو
8. لوح عرض
9. سبورة وأقلام
10. جهاز كمبيوتر



Course Specification of Health management

HIHS

1971



Basic Information

Course title:

Health management

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Section

Total of credit hours

1 Credit Hours

Code Number:

HS-LAB-3122

Course semester:

3rd year – 1st Semester

Course teaching staff:

Medical Laboratories teacher

Language used:

English languages

Course coordinator:

Dr. Hanaa Abdullah Hajar

Date of Specifications approval:



Professional Information

Course aims

This course is designed to help the students to acquire and understanding of the basic principle of health management to develop an ability to executives in many medical settings, including hospitals, health insurance companies and nursing homes.

Intended learning outcomes (ILOs)

A. Knowledge & Understanding

- a.1. Identify Concepts and modern methods in the field of health management.
- a.2. Describe The developments of health care system.
- a.3. Mention Medical staff in hospitals.
- a.4. Define health information system.
- a.5. Illustrate health policy.

Strategies of Teaching And Learning:

1. Advance lecture.

Assessment & Evaluation Methods:

1. Short Essay & Multiple chooses Questions.

B. Intellectual skills

- b.1. Identify factors that affect the utilization of health services.
- b.2. Implement Quality in health service.

Strategies of Teaching And Learning:

1. Interactive group Discussion

Assessment & Evaluation Methods:

1. Group discussion evaluation

C. Professional & Practical skills

- c.1. Recognize Management of hospital & health program.

Strategies of Teaching And Learning:

1. Play roles

Assessment & Evaluation Methods:

1. Observation

D. Transferable skills

- d.1. Work in team and time management.
- d.2. Perform presentation.





Strategies of Teaching And Learning:

1. Interactive group discussion
2. Oral presentation

Assessment & Evaluation Methods:

1. Evaluation of group discussion.
2. Oral presentation evaluation.

Curriculum structure and contents of the program

1- Theoretical Subjects:

No.	Subject	Contact hours	Learning & teaching strategies
1	Introduction health system	1	Advanced Lecture
2	Introduction health management (definition, importance)	1	Advanced Lecture
3	The developments of health care system	1	Advanced Lecture
4	Factors that affect the utilization of health services	2	Interactive group discussion & advanced lecture
5	General principles in health management	1	Advanced Lecture
6	Midterm exam	1	
7	Management of hospital & health program	1	Play role advanced Lecture
8	Medical staff in hospitals	1	Group discussion & advanced lecture
9	Administrative services in hospitals	1	Advanced Lecture
10	Quality in health services	2	Group work & advanced lecture
11	Quality of health care & patient safety	1	Advanced Lecture
12	Health information system	2	Advanced Lecture
13	Health policy	1	Advanced Lecture
	Total	16	



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Evaluation of course

No.	Evaluator Method	Percentage
3	Semester work	-
4	Participation	10%
5	Attendance	10%
6	Midterm exam	20%
7	Final term exam	60%

Evaluation table

No.	Evaluation appointment
1	Semester work week 4
2	Participation week 6
3	Midterm exam week 8
4	Attendance week 15
5	Final term exam week 16

Learning resources:

References:

1. Sharon B. Buchbinder, Introduction to health care management.
2. Leigh W. Cellucci, Essential of health care management.

منهج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

Facilities Required:

- 1- White board
- 2- Markers
- 3- Data show
- 4- Overhead projector



Course Specification Of Filed training I



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Basic Information

Course title

Filed training I

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Technology Section

Total of credit hours

9 Credit Hours in field training 1 and 11 Credit Hours in field training 11

Code Number:

HS-LAB-3123a

Course semester:

3rd year – 1st Semester

Course teaching staff:

Medical Laboratory teacher

Language used:

English languages

Course coordinator:

Dr. Fatima Al-Wathaf

Dr. Shawqi Al-Shameri

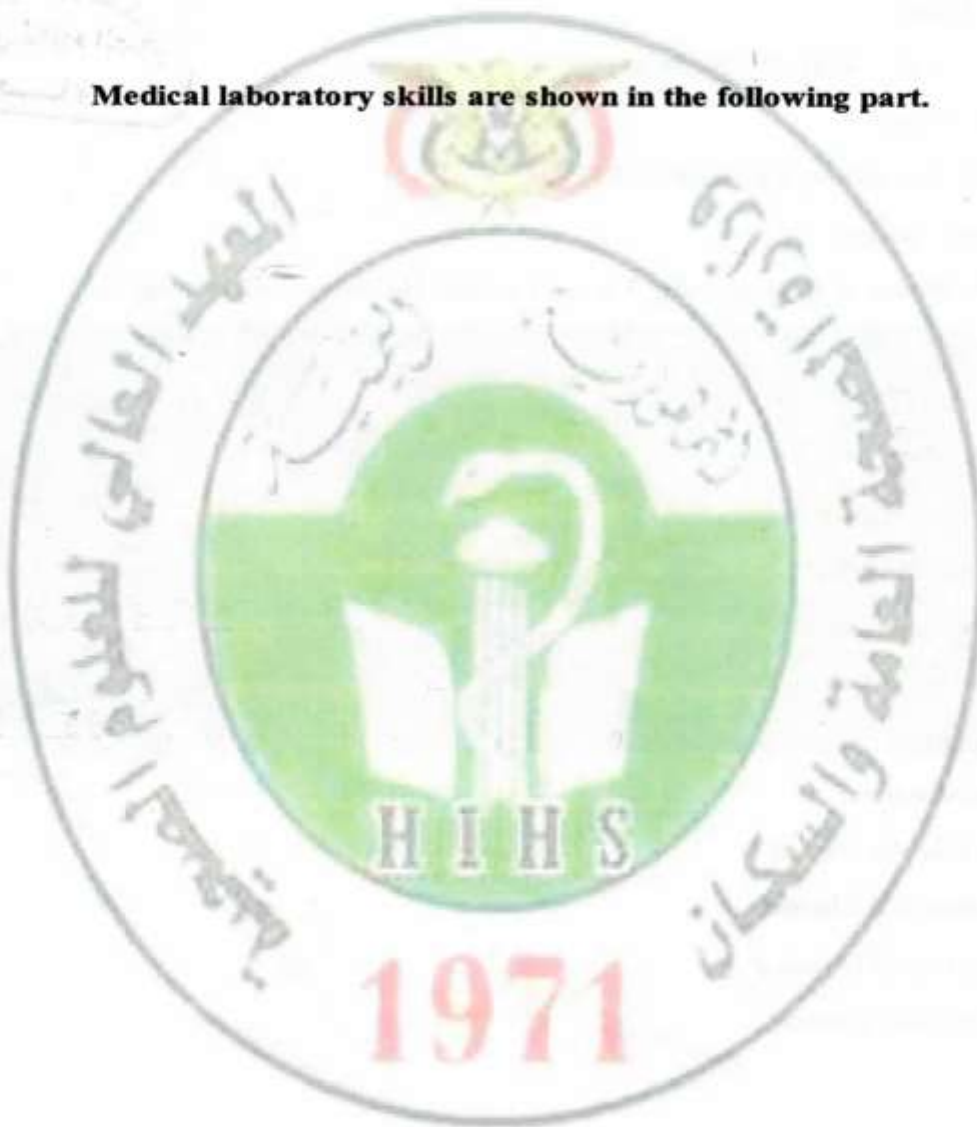
Dr. Hassen Al.Ghashm

Date of Specifications approval:





Medical laboratory skills are shown in the following part.





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منتوج خاص
بالمعهد العالي للعلوم الصحية
صنعاء

October
2019

Courses Specification

Third year – Second Semester

HIHS

1971



Course Specification Of Filed training II

HIHS

1971



Basic Information

Course title

Filed training II

Donor certificate

High Institute of Health Sciences

Program Section:

Medical Laboratory Technology Section

Total of credit hours

9 Credit Hours in field training 1 and 11 Credit Hours in field training 11

Code Number:

HS-LAB-3123b

Course semester:

3rd year - 2nd Semester

Course teaching staff:

Medical Laboratory teacher

Language used:

English languages

Course coordinator:

Dr. Fatima Al-Wathaf

Dr. Shawqi Al-Shameri

Dr. Hassen AlGhashm

Date of Specifications approval:





المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

مقدمة

عزيزي الطالب، عزيزتي الطالبة
ان التدريب العملي من الأهمية بمكان كونه الوسيلة الفعلية لفهم واستيعاب المفاهيم والمعلومات النظرية وتحويلها الى نوع
من الاستمتاع والارتقاء المعرفي والمهاري معاً وهو الجانب الأساسي لإكسابكم المهارات العملية اللازمة لك، لممارسة
تخصصك الدراسي بنجاح وفاعلية أثناء الدراسة وبعد التخرج فضلاً عن اكتساب مهارات مع المدربين والزملاء
والمرضى وغيرهم.
فاحرص على الاستفادة الكاملة من التدريب العملي والميداني ما استطعت واحترم مدرسيك ومديريك وخذ منهم ما
استطعت كم العلوم والتقنيات واجعل لك هدفاً في كل يوم تتعلمه من طرق تشخيص وتدريب وأخلاق مهنية.. متمنين لك
التوفيق والنجاح.

مقدمة المعهد



Hematology department

No.	Practical skills	performed	Looked	Non
1	Blood film preparation			
2	Fixation of blood film			
3	Staining of Blood film			
4	Hb measurement			
5	PCV reading			
6	RBCs count			
7	WBCs count \ Total -Differential			
8	MCV indices			
9	PLTS count			
10	Retics count			
11	Sickle cells test			
12	Clotting time			
13	Bleeding time			
14	PT \ PTT			
15	G6PD			
16	Blood Film report			

Other tests were done by the student.....

Notes.....

Name of the supervisor.....

Signature of the supervisor.....





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Parasitology department

No.	Practical skills	performed	Looked	Non
1	Stool collection			
2	Stool preparation			
3	Urine collection			
4	Urine preparation			
5	Stool examination			
6	Detection of parasites			
7	Urine examination			
8	Skin scraping for Leishmania-Onchocerca....			
9	Lieshmania bodies detection..			
10	Malaria parasites detection			

Other tests were done by the student.....

Notes

Name of supervisor

Signature of supervisor



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Clinical chemistry department

No.	Practical skills	performed	Looked	Non
1	Preparation of specimen			
2	Fasting blood sugar			
3	Random blood sugar			
4	Glucose after 2 hours			
5	Liver Function Tests			
6	Kidney Function Test			
7	Calcium			
8	Electrolytes			
9	Cholesterol			
10	Triglycerides			
11	Cardiac enzymes			
12	Hormones			
13	Proteins			
14	TIBC			
15	G6PD			
16	Stones			

Other tests were done by the student.....

Notes.....

Name of supervisor.....

Signature of supervisor.....





Microbiology department

No.	Practical skills	Type of specimen	performed	Looked	Non
1	Specimen collection				
2	Media preparation				
3	Wet preparation of Specimen				
4	Gram staining				
5	Cultivation of Specimen				
6	Isolation & Identification				
7	Biochemical tests reactions				
8	Sensitivity testing				

Other tests were done by the student.....

Notes.....

Name of the supervisor.....

Signature of the supervisor.....



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Blood Banking department

No.	Practical skills	performed	Looked	Non
1	ABO Blood groups			
2	Rh - system			
3	Anti- D			
4	Direct Coombs test			
5	Indirect- Coombs test			
6	Other antibodies			

Other tests were done by the student.....

Notes

Name of supervisor

Signature of supervisor





المعهد العالي للعلوم الصحية - منهج المختبرات الطبية نظام ثلاث سنوات 2019

Immunology & serology department

No.	Practical skills	performed	Looked	Non
1	Widal test			
2	VDRL test			
3	ASO			
4	RF			
5	CRP			
6	Paul bunnell test			
7	Hepatitis B test			
8	Hepatitis C test			
9	HIV			
10	Toxoplasmosis			
11	Brucella			
12	Cytomegalo virus			
13	Titration of tests			

Other tests were done by the student.....

Notes.....

Name of the supervisor.....

Signature of the supervisor.....



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Reception department

No.	Practical skills	performed	Looked	Non
1	Patient receiving			
2	Detect median vein			
3	Blood aspiration			
4	Types of specimens (blood- serum- plasma)			
5	Volume of sample			
6	Types of anticoagulants			
7	Some standard conditions of tests (Fasting or non)			
8	Label the specimen			

Other tests were done by the student.....

Notes

Name of supervisor

Signature of supervisor





المعهد العالي للعلوم الصحية – منهج المختبرات الطبية نظام ثلاث سنوات 2019

No.	Comprehensive Theory and practical exam in
1	Hematology
2	Bacteriology
3	Parasitology
4	Clinical chemistry
5	Blood banking
6	Immunology and serology

