بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

Developing A Competency-Based Medical Curriculum, Kasr Alainy experience

Kasr Alainy Modular Program *K.A.M.P 2018/2019*

Dr Tarek Ahmed Said
Professor of Plastic Surgery
Director of Integrated Program of Kasr Alainy (IPKA)
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Pre-Congress Workshop

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Faculty of Medicine, Cairo University, 21st April 2018

Medical Education Development

Integration

Competency-Based Medical Education

Milestones

Programs

Structure-Based

↓

Outcome-Based (OBME)

↓

Competency-Based (CBME)

Competency Based Medical Education (CBME)

The Intersection between *knowledge*, *skills*, *attitudes* and *values* as well as the mobilization of specific components in order to *transfer* them to a certain context or real situation, hence coming up with the best action/solution possible to address all different situations and problems that can emerge at any moment, making use of the available resources (Gómez del Pulgar, 2011)

The Proven Ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development, (European Qualification Framework EQF, 2015)

Competency Based Medical Education (CBME)

Competency Unit (Area)

A stand alone function or functional area underlying some aspect of professional performance

Competency element (Key Competency)

A subsection of a competency unit, and contains examples of competent performance known as cues

Competency standards

Consists of Competency areas and Key competencies

National competency standards for the registered nurse, Nursing and midwifery board of Australia (2006)

Competency Based Medical Education (CBME)

"An outcomes-based approach to the design, implementation, assessment and evaluation of a medical education program using an organizing framework of competencies"

Frank et al (2010)

"In a traditional educational system, the unit of progression is time and it is teacher-centered. In a CMBE system, the unit of progression is mastery of specific knowledge and skills and is learner-centered."

Sullivan (1995)

Competency Based Medical Education (CBME)

	Educational Program Approach	
Variable	Structure/Process	Competency-based
Driving force for curriculum	Content-knowledge acquisition	Outcome-knowledge application
Driving force for process	Teacher	Learner
Path of learning	Hierarchical (Teacher→student)	Non-hierarchical (Teacher↔student)
Responsibility for content	Teacher	Student and Teacher
Goal of educ. encounter	Knowledge acquisition	Knowledge application
Typical assessment tool	Single subject measure	Multiple objective measures
Assessment tool	Proxy	Authentic (mimics real tasks of profession)
Setting for evaluation	Removed (gestalt)	"In the trenches" (direct observation)
Evaluation	Norm-referenced	Criterion-referenced
Timing of assessment	Emphasis on summative	Emphasis on formative
Program completion	Fixed time	Variable time

Carraccio, 2002.

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Medical Education in Egypt: Historical Background, Current Status, and Challenges

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Abstract

Background: From its beginnings in 1827, an important goal of medical education in Egypt has been to qualify physicians who can provide high-quality health care services for their local community and other communities in the Middle East region.
Objective and method: To describe the historical background, current status, and future challenges of medical education in Egypt, the authors conducted an extensive internet search, and made electronic communications as well as site visits to gather relevant data. In the final phase, the authors organized and interpreted their data with emphasis on the historical background, features of the curricula, practices of quality, and accreditation, as well as the challenges encountered. The authors collected data from 27 medical schools, all of which are supervised by Egypt's Supreme Council of Universities.
Results: The findings showed that the undergraduate programs (UGMEs) of medical schools in Egypt can be broken down into three categories reflecting the status of reform: innovative, traditional, or in transition. Areas of reform have included the main features of curriculum, teaching and learning methods, and assessment tools. Postgraduate studies in medicine (PGSM) in Egypt take place under two systems: the academic system, offered by universities, and the professional Fellowship of Egyptian Board (FEB) program, offered by the Ministry of Health. There are many initiatives to establish a national regulatory system for continuing medical education, but none of these initiatives is yet well established.
Conclusion: While UGME reform in Egypt is progressing, improvements are still required in both PGSM and CME.

Keywords: Egypt; Undergraduate medical education; Postgraduate medical education; Continuous medical education; Education reform

1. Introduction

Approximately 30% of Egyptians between 17 and 24 years of age attend university. Currently, nationwide, there are 25 public universities, 51 public non-university

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Before 2009, the majority of medical schools in Egypt adopted *discipline-based curricula*, in which didactic large-group lectures and apprenticeship approaches to clinical teaching were the main methods of instruction. An exception was FOM-SCU, which since its establishment has applied an integrated curriculum that features innovative instructional methods, including simulation, early clinical exposure, and project-based learning, in addition to problem-based learning (PBL) and community-based education (CBE).[6] The PBL parallel track at Al-Mansoura Faculty of Medicine began in 2006, the integrated curriculum at Alexandria Faculty of Medicine in 2009, the modular parallel track at Ain Shams University in 2014, and the Integrated Program of Kasr Al-Ainy (IPKA) in 2015; all of these are alternative models using student-centered teaching approaches

Abdel Aziz et al (2018)

National Academic Reference Standards (NARS)

Medicine

2nd Edition, 2017

National Authority for Quality Assurance and Accreditation "NAQAAE"

NARS 2017

Shifting from
Outcome-based to Competency based medical education CBME

6 competency areas including 65 key competencies

i - Graduate as a health care provider (17 key competencies)

ii - Graduate as a health promoter (9 key competencies)

iii- Graduate as a professional (9 key competencies)

iv - Graduate as a scholar and scientist (8 key competencies)

v - Graduate as a member of a team & system (12 key competencies)

vi - Graduate as a life long learner & researcher (10 key competencies)

Competency Area I

Graduate as a health care provider

The graduate should provide quality, safe, patient-centered care, drawing upon his/her integrated knowledge and clinical skills, and adhering to professional values. The graduate should collect and interpret information, make clinical decisions and carry out diagnostic and therapeutic interventions with an understanding of the limits of his/her expertise, considering the patient's circumstances and preferences as well as the availability of resources

The graduate should be able to:

Competency Area I

Graduate as a health care provider

1.1. Take and record a structured, patient centered history

1.2. Adopt an empathic and holistic approach to the patients and their problems.

1.3. Assess the mental state of the patient.

1.4. Perform appropriately timed full physical examination of patients appropriate to the age, gender, and clinical presentation of the patient while being culturally sensitive.

1.5. Prioritize issues to be addressed in a patient encounter.

1.6. Select the appropriate investigations and interpret their results taking into consideration cost/ effectiveness factors.

1.7. Recognize and respond to the complexity, uncertainty, and ambiguity inherent in medical practice.

1.8. Apply knowledge of the clinical and biomedical sciences relevant to the clinical problem at hand.

1.9. Retrieve, analyze, and evaluate relevant and current data from literature, using information technologies and library resources, in order to help solve a clinical problem based on evidence (EBM).

Competency Area I

Graduate as a health care provider

1.10. Integrate the results of history, physical and laboratory test findings into a meaningful diagnostic formulation.

1.11. Perform diagnostic and intervention procedures2 in a skillful and safe manner, adapting to unanticipated findings or changing clinical circumstances.

1.12. Adopt strategies and apply measures that promote patient safety

1.13. Establish patient-centered management plans in partnership with the patient, his/her family and other health professionals as appropriate, using Evidence Based Medicine in management decisions.

1.14. Respect patients' rights and involve them and /or their families/carers in management decisions.

1.15. Provide the appropriate care in cases of emergency, including cardio-pulmonary resuscitation, immediate life support measures and basic first aid procedures.

1.16. Apply the appropriate pharmacological and nonpharmacological approaches to alleviate pain and provide palliative care for seriously ill people, aiming to relieve their suffering and improve their quality of life.

1.17. Contribute to the care of patients and their families at the end of life, including management of symptoms, practical issues of law and certification.

Competency Area II

Graduate as a health promoter

The graduate should advocate for the development of community and individual measures which promote the state of well-being, he/she should empower individuals and communities to engage in healthy behaviors, and put his/her knowledge and skills to prevent disease, reduce deaths and promote quality life style

The graduate should be able to:

Competency Area II

Graduate as a health promoter

2.1 Identify the basic determinants of health and principles of health improvement.

2.2 Recognize the economic, psychological, social, and cultural factors that interfere with wellbeing.

2.3 Discuss the role of nutrition and physical activity in health.

2.4 Identify the major health risks in his/her community, including demographic, occupational and environmental risks; endemic diseases, and prevalent chronic diseases.

2.5 Describe the principles of disease prevention, and empower communities, specific groups or individuals by raising their awareness and building their capacity.

2.6 Recognize the epidemiology of common diseases within his/her community, and apply the systematic approaches useful in reducing the incidence and prevalence of those diseases.

2.7 Provide care for specific groups including pregnant women, newborns and infants, adolescents and the elderly.

2.8 Identify vulnerable individuals that may be suffering from abuse or neglect and take the proper actions to safeguard their welfare.

2.9 Adopt suitable measures for infection control.

قرار رئيس مجلس الوزراء
رقم ٥٦٥ لسنة ٢٠١٨
بتعديل بعض أحكام اللائحة التنفيذية لقانون تنظيم الجامعات

رئيس مجلس الوزراء

بعد الاطلاع على الدستور ؛

وعلى قانون تنظيم الجامعات الصادر بالقانون رقم ٤٩ لسنة ١٩٧٢ وتعديلاته ؛

وعلى اللائحة التنفيذية لقانون تنظيم الجامعات الصادرة بقرار رئيس الجمهورية رقم ٨٠٩ لسنة ١٩٧٥ وتعديلاتها ؛

وعلى قرار رئيس الجمهورية رقم ٣٨٧ لسنة ٢٠١٥ بتفويض رئيس مجلس الوزراء فى بعض الاختصاصات ؛

وعلى موافقة المجلس الأعلى للجامعات ؛

وبعد موافقة مجلس الوزراء ؛

وعلى ما ارتآه مجلس الدولة ؛

وبناءً على ما عرضه وزير التعليم العالى والبحث العلمى ؛

قـــــرر :

(المـادة الاولى)

يُستبدل بنص المادة (١٥٤) من اللائحة التنفيذية لقانون تنظيم الجامعات المشار إليها النص الآتى :

« مدة الدراسة لنيل درجة البكالوريوس فى الطب والجراحة خمس سنوات بنظام الساعات أو النقاط المعتمدة » .

(المـادة الثانيه)

يُنشر هذا القرار فى الجريدة الرسمية ، ويسرى على الطلاب الملتحقين الجدد اعتباراً من العام الدراسي ٢٠١٨/٢٠١٩

صدر برئاسة مجلس الوزراء فى ١١ رجب سنة ١٤٣٩ هـ

(الموافق ٢٩ مارس سنة ٢٠١٨ م) .

رئيس مجلس الوزراء ،

مهندس/ شريف إسماعيل

رقم الإيداع بدار الكتب ٢٠١٨/٦٥ الهيئة العامة لشئون المطابع الأميرية ٢٦٠٣١ / ٢٠١٧ - ٢٠١٨/٤/١ - ١٣٠٨

Curriculum Development Committee

Dean's Decision No (368) on November 4th 2017
21 general meetings and more then **50** small meetings
Participation of **5** universities; Cairo, Beni Suef, Fayoum, October & MUST
Over **100** Staff members representing all specialties, quality unit, medical education center & technology enhanced learning unit
Representatives of students and house officers

جامعة القاهرة
Cairo University

مكتب العميد

كلية الطب
Faculty of Medicine

قرار عميد الكلية

رقم (٣٦٨) صادر بتاريخ ٤/ ١١ /٢٠١٧

عميد الكلية:

- بعد الإطلاع علي القانون رقم ٤٩ لسنة ١٩٧٢ بشأن تنظيم الجامعات ولائحته التنفيذيـة والقـرارات المعدلة له.
- وعلى قرار رئيس الجمهورية رقم ٨٠٩ لسنة ١٩٧٥ بإصدار اللائحة التنفيذية لقانون تنظيم الجامعات.
- وعلى موافقتنا.

قـــرر

مادة (١): تُشكل اللجنة العليا التنسقية لتحضير الكلية لتطبيق النظام الحديث للنقاط المعتمدة وذلـك علي النحو التالي

ا.د. فتحي رزق فاروق خضير	عميد الكلية	(بصفته رئيسا)
أ.د. محمد طارق زكي أنيس	وكيل الكلية لشئون للدراسات العليا والبحوث	(بصفته)
ا.د. هالة صلاح الدين طلعت	لشئون التعليم والطلاب	(بصفتها)
أ.د. خالد مكين عبدالعظيم	وكيل الكلية لشئون خدمة المجتمع	(بصفته)
أ.د. نادية حسن بدراوي	أستاذ متفرغ طب الأطفال	
أ.د. منى محمود علي حامد	رئيس قسم الطفيليات	
ا.د. مني عطية محمود هنا	مدير وحدة الجودة	
- ا.د. هشام محمود عامر	أستاذ الجراحة العامة ومدير لجنة التقييم	
أ.د. طارق أحمد حسن سعيد	مدير البرنامج التعليمي ومدير لجنة تطوير المناهج	
ا.د. محمد حسن علي فهمي	أستاذ الجراحة العامة	
ا.د.حاتم حمدي العيشي	أستاذ الروماتيزم والتأهيل	
ا.د. نرمين مفتاح جلال فتح الله	أستاذ طب الأطفال	
ا.د. ايمان عبد المجيد عيسي	مدرس طب وجراحة العين	
ا.د. ماريزيوسف عوض الله	مدرس الأشعة التشخصية	

أعضاء من الخارج:

- ا.د. خالد الخشاب	وكيل الكلية لشئون التعليم والطلاب بطب الفيوم
- أ.د. وائل الشاعر	وكيل الكلية لشئون التعليم والطلاب بطب بني سويف
- أ.د. نهاد محبوب	وكيل الكلية لشئون التعليم والطلاب بطب مصر والعلوم والتكنولوجيا
-	ممثل عن كلية طب ٦ أكتوبر

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Faculty of Medicine

لجنة تطوير المناهج

- ا.د. فتحي رزق فاروق خضير	عميد الكلية	(بصفته رئيسا)
- أ.د. محمد طارق زكي أنيس	وكيل الكلية وكيل الكلية لشئون للدراسات العليا	(بصفته)
- أ.د. هاله صلاح الدين طلعت	وكيل الكلية لشئون التعليم والطلاب	(بصفتها)
- ا.د طارق احمد حسن سعيد	مدير البرنامج التعليمي ومدير اللجنة	
- أ.د. مصطفى عبدالحميد سالم	مدير مركز التعليم الطبي بصفته مسئولاً عـن تطـوير قدرات أعضاء هيئة التدريس	
- ا.د. منال رشدي محمد العصري	استاذ الأمراض الباطنة	
- ا.د. عبير أحمد زايد	أستاذ الطب الشرعي	
- ا.د. حنان عبد العزيز مبارك	أستاذ الفسيولوجيا	
- ا.د هالة عصام الدين محمد كحلة	استاذ الأمراض الباطنة	
- د صافي زاهد عبد الرحمن	أستاذ مساعد الأمراض الصدرية	
- د. منى محمد شعبان	مدرس التوليد وامراض النساء	
- د. منى سعيد الشربيني سليمان	مدرس الطفيليات	
- د. زينب احمد محمد نور عطيه	مدرس الكيمياء الحيوية الطبية	

لجنة التقييم

- ا.د. فتحي رزق فاروق خضير	عميد الكلية	(بصفته رئيسا)
- أ.د. محمد طارق زكي أنيس	وكيل الكلية وكيل الكلية لشئون للدراسات العليا	(بصفته)
- أ.د. خالد مكين عبدالعظيم	وكيل الكلية وكيل الكلية لشئون خدمة المجتمع	(بصفتها)
- ا.د. جيهان ابراهيم ابو الفتوح	رئيس قسم الهستولوجيا	
- ا.د. هشام محمود عامر	أستاذ الجراحة العامة ومدير اللجنة	
- ا.د. منال عبد الواحد بصيلة	أستاذ الأمراض الجلدية	
- ا.د. زينب محمد المعداوي	استاذ الهستولوجيا	
- ا.د. ايهاب عبد العزيز الشعراوي	استاذ التشريح	
- أ.د. أحمد سليمان نصر	أستاذ التوليد وأمراض النساء	
- د. شيماء ابراهيم محمد الجعفرى	مدرس الفسيولوجيا الإكلينيكية للجهاز العصبي	

مادة (٢): يتم دعوة مديري لجنة تطوير المناهج ولجنة التقييم لحضور اجتماعات مجلـس الكليـة بصفه دورية.

مادة (٣): يُنشر هذا القرار على جميع المختصين بتنفيذه.

عميد الكلية
أ.د/ فتحي خضير

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إجتماعات لجنة تحضير المنهج الجديد

أولاً: إجتماعات اللجنة العليا التنسيقية و لجنة المناهج

١- إجتماع الاول تحضيرى لبدء أعمال اللجنة ٢٢ نوفمبر ٢٠١٧
٢- الاجتماع الثانى ٢٦ نوفمبر ٢٠١٧
٣- الاجتماع الثالث ٢٨ نوفمبر ٢٠١٧
٤- الإجتماع الرابع ٤ ديسمبر ٢٠١٧
٥- الإجتماع الخامس ٩ ديسمبر ٢٠١٧
٦- الإجتماع السادس ٢٣ ديسمبر ٢٠١٧
٧- الإجتماع السابع ٢٧ ديسمبر ٢٠١٧
٨- الإجتماع الثامن مع رؤساء الأقسام ٩ يناير ٢٠١٨ تم بعده ارسال المقترح للأقسام للدراسة
٩- الإجتماع التاسع ١٧ يناير ٢٠١٨
١٠- الاجتماع العاشر مع رؤساء أقسام العلوم الأساسية و منسقي الوحدات الدراسية ١٣ فبراير ٢٠١٨
١١-الاجتماع الحادى عشر مع منسقي الوحدات الدراسية ١٣ فبراير ٢٠١٨
١٢- الاجتماع الثانى عشر ٢٧ مارس ٢٠١٨
١٣-الاجتماع الثالث عشر ٢٨ مارس ٢٠١٨
١٤-الاجتماع الرابع عشر ٢٩ مارس ٢٠١٨
١٥- الاجتماع الخامس عشر ٣١ مارس ٢٠١٨

ثانياً: ورش عمل و ندوات إلكترونية

ثالثاً: مقترحات الاقسام

١- مقترح من قسم صحة الاسرة
٢- مقترح من قسم الصحة العامة
٣- مقترح من قسم الطب الشرعى و السموم الإكلينيكية

رابعاً: إجتماعات تنسيقية للمناقشة و تفعيل التكامل "مع" و "بين" الاقسام المختلفة

١- إجتماع مع رئيس قسم صحة الاسرة ٢٢ يناير ٢٠١٨
٢- إجتماع مع رئيس قسم الصحة العامة ٢٤ يناير ٢٠١٨
٣- إجتماع مع رئيس الباطنة ٢٤ يناير ٢٠١٨
٤- اجتماع في قسم الميكروبيولوجى ٢٩ يناير ٢٠١٨
٥- إجتماع مع أعضاء قسم الجراحة ٥ فبراير ٢٠١٨
٦- إجتماع مشترك مع رئيسي قسم الباطنة و الجراحة ٦ فبراير ٢٠١٨
٧- اجتماع في قسم الكيمياء الحيوية ٧ فبراير ٢٠١٨
٨- اجتماع في قسم الميكروبيولوجى ٧ فبراير ٢٠١٨
٩- اجتماع في قسم الفارماكولوجى ٧ فبراير ٢٠١٨
١٠- إجتماع مشترك لأقسام الفارماكولوجى و الميكروبيولوجى ٧ فبراير ٢٠١٨
١١- إجتماع مشترك لأقسام الفسيولوجى و الهستولوجى و الكيمياء الحيوية ١٠ فبراير ٢٠١٨
١٢- إجتماع مشترك لأقسام الجراحة و الباطنة و النساء و الأطفال ١١ فبراير ٢٠١٨
١٣- عرض البرنامج على مجلس قسم الجراحة ١٢ فبراير ٢٠١٨
١٤- إجتماع لرؤساء اقسام العلوم الأساسية و منسقى الوحدات الدراسية ١٣ فبراير ٢٠١٨
١٥- إجتماع لرؤساء اقسام العلوم الأساسية لمناقشة بعض بنود اللائحة المتعلقة بالاختبارات ٢٠ فبراير ٢٠١٨
١٦- إجتماع مشترك لأقسام الباثولوجى و الفسيولوجى و الهستولوجى و الكيمياء الحيوية ٢١ فبراير ٢٠١٨
١٧- إجتماع مشترك لرؤساء أقسام الجراحة و الباطنة و النساء و الأطفال ٢١ فبراير ٢٠١٨
١٨- عرض لمجلس قسم الامراض النفسية ٦ مارس ٢٠١٨
١٩- عرض لمجلس قسم العظام ١٣ مارس ٢٠١٨
٢٠- عرض لمجلس قسم المسالك البولية و التناسلية ١٤ مارس ٢٠١٨
٢١- إجتماع مشترك لأقسام الجراحة و العظام و المسالك ١٩ مارس ٢٠١٨

خامساً: عروض للجان و مجلس الكلية

١- عرض لمجلس الكلية ٢٥ فبراير ٢٠١٨
٢- عرض للجنة شؤون التعليم و الطلاب ١١ مارس ٢٠١٨

Committee Tasks

✓ Program Framework & Milestones

✓ Modules' weights

✓ Module coordinators

✓ Course ILOs in accordance wth NARS 2017

← Writing Modules

✓ Writing Bylaws

↖ Program Specs

↖ Program Matrix

✓ Teaching facilities' coding & database

✓ Laboratory development

← E-Learning Unit & Internet Platform development

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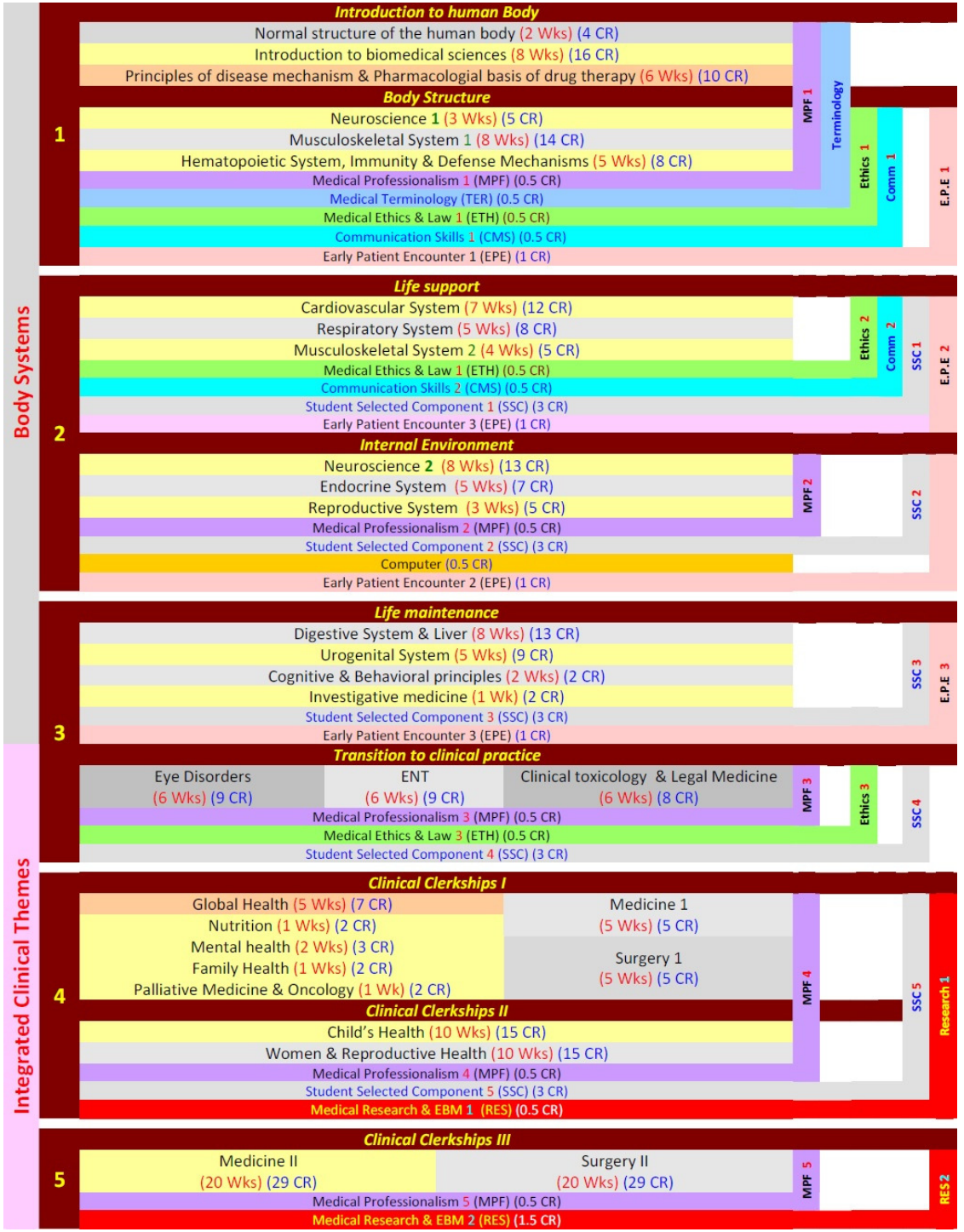
- **Revision of key competencies against Current program ILOs**
- **Adding new modules to achieve new key Competencies**

New Additions

- Family Medicine
- Investigative Medicine (Diagnostics)
- Mental Health & Cognitive Principles
- Palliative Medicine & Oncology
- Medical Research Methodology, Biostatistics & EBM
- Medical Ethics & Law
- Medical Professionalism
- Communication Skills


Body Systems
Integrated Clinical Themes
1
Introduction to human Body
Normal structure of the human body (2 Wks) (4 CR)
Introduction to biomedical sciences (8 Wks) (16 CR)
Principles of disease mechanism & Pharmacologial basis of drug therapy (6 Wks) (10 CR)
Body Structure
Neuroscience 1 (3 Wks) (5 CR)
Musculoskeletal System 1 (8 Wks) (14 CR)
Hematopoietic System, Immunity & Defense Mechanisms (5 Wks) (8 CR)
Medical Professionalism 1 (MPF) (0.5 CR)
Medical Terminology (TER) (0.5 CR)
Medical Ethics & Law 1 (ETH) (0.5 CR)
Communication Skills 1 (CMS) (0.5 CR)
Early Patient Encounter 1 (EPE) (1 CR)
MPF 1
Terminology
Ethics 1
Comm 1
E.P.E 1
2
Life support
Cardiovascular System (7 Wks) (12 CR)
Respiratory System (5 Wks) (8 CR)
Musculoskeletal System 2 (4 Wks) (5 CR)
Medical Ethics & Law 1 (ETH) (0.5 CR)
Communication Skills 2 (CMS) (0.5 CR)
Student Selected Component 1 (SSC) (3 CR)
Early Patient Encounter 3 (EPE) (1 CR)
Ethics 2
Comm 2
SSC 1
E.P.E 2
Internal Environment
Neuroscience 2 (8 Wks) (13 CR)
Endocrine System (5 Wks) (7 CR)
Reproductive System (3 Wks) (5 CR)
Medical Professionalism 2 (MPF) (0.5 CR)
Student Selected Component 2 (SSC) (3 CR)
Computer (0.5 CR)
Early Patient Encounter 2 (EPE) (1 CR)
MPF 2
SSC 2
3
Life maintenance
Digestive System & Liver (8 Wks) (13 CR)
Urogenital System (5 Wks) (9 CR)
Cognitive & Behavioral principles (2 Wks) (2 CR)
Investigative medicine (1 Wk) (2 CR)
Student Selected Component 3 (SSC) (3 CR)
Early Patient Encounter 3 (EPE) (1 CR)
SSC 3
E.P.E 3
Transition to clinical practice
Eye Disorders (6 Wks) (9 CR)
ENT (6 Wks) (9 CR)
Clinical toxicology & Legal Medicine (6 Wks) (8 CR)
Medical Professionalism 3 (MPF) (0.5 CR)
Medical Ethics & Law 3 (ETH) (0.5 CR)
Student Selected Component 4 (SSC) (3 CR)
MPF 3
Ethics 3
SSC 4
4
Clinical Clerkships I
Global Health (5 Wks) (7 CR)
Nutrition (1 Wks) (2 CR)
Mental health (2 Wks) (3 CR)
Family Health (1 Wks) (2 CR)
Palliative Medicine & Oncology (1 Wk) (2 CR)
Medicine 1 (5 Wks) (5 CR)
Surgery 1 (5 Wks) (5 CR)
Clinical Clerkships II
Child's Health (10 Wks) (15 CR)
Women & Reproductive Health (10 Wks) (15 CR)
Medical Professionalism 4 (MPF) (0.5 CR)
Student Selected Component 5 (SSC) (3 CR)
Medical Research & EBM 1 (RES) (0.5 CR)
MPF 4
SSC 5
Research 1
5
Clinical Clerkships III
Medicine II (20 Wks) (29 CR)
Surgery II (20 Wks) (29 CR)
Medical Professionalism 5 (MPF) (0.5 CR)
Medical Research & EBM 2 (RES) (1.5 CR)
MPF 5
RES 2

System-Based Modules

Block Source

CONTENT

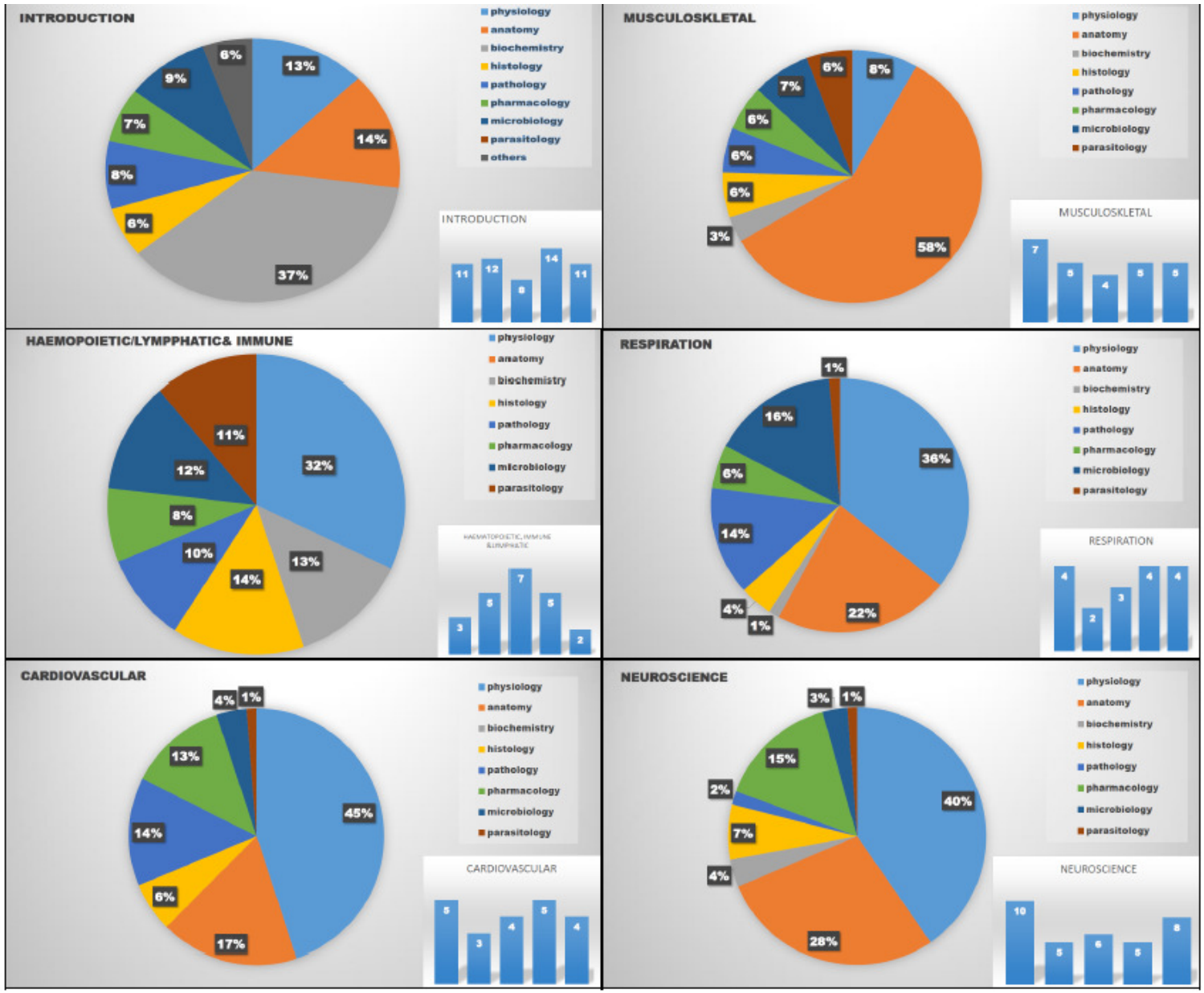
Anatomy of Oral Cavity & Salivary Glands Amatomy of Pharynx. Oesophagus, GIT, Liver & Biliary Systems Embryology of GIT			GIT & Liver
Biochemistry of Digestion & Absorption Biochemistry of Liver Metbolism & Fatty Liver			
Mirco: Normal Flora	Mirco: Staph	Mirco: Bacillus erues	
Mirco: Clostr Difficile	Mirco: Salmonella	Mirco: Shigella	
Mirco: Yersinia enterocolitis	Mirco: Yersinia psudotuberculosis	Mirco: HHV-7	
Mirco: Vibrio	Mirco: Campylobacter	Mirco: Helicobacter	
Mirco: Bacteroidrs	Mirco: Borellia Vinc	Mirco: Leptospira	
Mirco: Hepatits viruses	Mirco: Yellow fever virus	Mirco: Mumps	
Mirco: Rota virus	Mirco: Calicivirus	Mirco: Astroviruses	
Physiology: GIT			
Histology: Oral cavity Histology: GIT Histology: digestive glands Histology: salivary glands Histology: pancreas Histology: liver			
Pharma: Gastro-intestinal tract			
Pathology of GIT Pathology of Hepatobilliary Pathology of Pancreas			
Parasitology: Cestodes Parasitology: Introduction to Nematodes, Intestinal nematodes Parasitology: Protozology, Intestinal			
Anatomy of Urinary System Anatomy of Male Genital Sstem & Perineum Embryology of Genitourinary system			Urogenital
Mirco: Normal Flora	Mirco: Eneterococci	Mirco: Neisseria gonorrhoea	
Mirco: E Coli	Mirco: Proteus	Mirco: Mycoplasma hominis	
Mirco: Ureaplasma urealyticum	Mirco: Candida	Mirco: Herpes viruses	
Mirco: Rubella	Mirco: Cytomegalovirus		
Physiology: Kidney			
Histology: Urinary System Histology: Male genital System			
Pharma: Renal pharmacology			
Pathology of Kidney Pathology of Urinary tract and male genital			
Parasitology: Urogenital Protozoa			

Integration & Adjustment

- Meeting in Microbiology department – 29/1/2018
- Meeting in Biochemistry department – 7/2/2018
- Meeting in Microbiology Department – 7/2/2018
- Meeting in Pharmacology department – 7/2/2018
- Joint Meeting: Pharmacology & Microbiology – 7/2/2018
- Joint Meeting: Biochemistry, Physiology & Histology – 10/2/2018
- Joint Meeting: Pathology, Physiology, Biochemistry & Histology – 21/2/2018
- Summative Meeting: Basic Sciences' Department heads & Module coordinators – 13/2/2018
- Summative Meeting: Basic Sciences' Department heads – 20/2/2018

Modules Weights

FINAL	Anat	Phys	Bio	Hist	Path	Pharm	Micro	Para	Hours
Introductory (Including Metabolism)	19	40	204	46	87	29	34	19	478
Musculoskeletal & Integumentary 1 + 2	170	23	7	28	15	2	19	19	283
Hemopoetic & Immunity	14	26	13	21	7	6	16	21	124
Cardiovascular	45	59	8	6	20	28	7	0	173
Endocrine	24	47	8	9	7	14	0	0	109
GIT & Liver	46	21	8	30	28	10	15	38	196
Respiratory	31	35	3	7	13	6	25	2	122
Neuroscience 1	11	19	0	13	0	25	0	0	68
Neuroscience 2	42	78	0	29	7	22	11	6	195
Urogenital (Including Male Genital)	30	26	0	21	20	20	9	6	132
Reproduction (Including Female Genital)	16	14	0	13	20	4	5	0	72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NEUROSCIENCE
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Coordinators
&
Block Writing Committees

Block	Coordinator from	Writing Committee
Biomedical Sciences	Biochemistry	Physiology – Anatomy
Introduction to Human Body	Histology	Anatomy
Mechanism of Disease and Drug Therapy	Pathology	Pharma – Micro – Para - Medicine
Musculoskeletal	Anatomy	Phy – Bio – Hist – Path – Pharm – Micro – Para – Medicine – Surgery – Ortho – Rheumatoloy
Hemopoeitic	Histology	Anat - Phy – Bio – Path – Pharm – Micro – Para – Medicine – Pediatrics – Rheumatoloy
Endocrine	Physiology	Anat - Bio – Hist – Path – Pharm –Medicine – Surgery
Cardiovascular	Physiology	Anat – Bio – Hist – Path – Pharm - Mirco –Medicine – Surgery - Cardiothoracic
Respiratory	Microbiology	Anat – Phys – Hist – Path – Pharm - Para –Medicine
GIT & Liver	Parasitology	Anat – Phys – Bio - Hist – Path – Pharm - Micro – Medicine - Surgery
Neuroscience 1	Pharmacology	Anat – Phys - Hist –Medicine - Surgery
Neuroscience 2	Anatomy	Phys –Hist – Path – Pharm – Micro - Para –Medicine - Surgery
Urogenital	Pathology	Anat - Phys –Hist –Pharm – Micro - Para –Medicine – Surgery - Andrology
Reproduction	Physiology	Anat - Hist –Path - Micro - Medicine – OB/G - Andrology
Investigative	Internal Medicine	Radiology – Clinical Pathology – Oncology - Chest – Surgery – Para - Path
Family Medicine	Internal Medicine	Family Medicine – Community – OB/G - Pediatrics – Surgery
Palliative & Oncology	Anesthesiology	Surgery - Oncology

الوحدة الدراسية	المنسق	لجنة الكتابة
Introduction to Biomedical Sciences	ا.د حنان حسنى - كيمياء حيوية	ا.د هدي يوسف - فسيولوجي
Cardiovascular	ا.د هانى محمد جمال - فسيولوجي	ا.د دعاء مهدى - ميكروبيولوجي ا.د رانيا محمد - باثولوجي ا.د شريف فهمي - تشريح ا.د نجوى عبد الوهاب - هستولوجي ا.د هشام محمد محمود - فارماكولوجي
Urogenital	ا.د سامية جبل - باثولوجي	ا.د ابراهيم محمدى - فسيولوجي ا.د احمد نعيم - باثولوجي ا.د أشرف سرور - ميكروبيولوجي Genital ا.د أمل مصطفى - هستولوجي ا.د عبير فؤاد - هستولوجي ا.د حسام يحيي - تشريح Urinary ا.د سحر عزت - هستولوجي ا.د عمرو ماهر - فارماكولوجي ا.د منى الشربينى - طفيليات ا.د وائل مصطفى –باثولوجي ا.د طه عبد الناصر محمد –ذكورة ا.د عمرو المليجي - باطنة ا.د احمد الشنوفي - مسالك
Reproduction	ا.د ماجدة الحمزاوى- فسيولوجي ♀	ا.د أمل مصطفى - هستولوجي ا.د حسام يحيي - تشريح ا.د دينا رضوان - هستولوجي ا.د دينا فوزى - باثولوجي ا.د سمية عبد اللطيف - باثولوجي ا.د محمد محمود - فارماكولوجي
Neuroscience 1	ا.د هشام عطيه - فارماكولوجي	ا.د إيمان صادق - هستولوجي ا.د إيهاب عبد العزيز - تشريح ا.د سهى على - فارماكولوجي ا.د مارى عطية - هستولوجي ا.د منى صلاح الدين - باثولوجي ا.د هدي يوسف –فسيولوجي ا.د هبة مصطفى - باطنة
Neuroscience 2	ا.د إيهاب عبد العزيز - تشريح	ا.د إيمان صادق - هستولوجي ا.د ريهام فهمى - ميكروبيولوجي ا.د عبير الحنبلى - طفيليات ا.د عفاف عثمان - فارماكولوجي ا.د لبنى عمر - باثولوجي ا.د مها بليغ - هستولوجي Special Senses ا.د مها جمال الدين - فسيولوجي Sensory ا.د مها صبرى - فسيولوجي Motor ا.د نجاة يونان - فسيولوجي Sensory ا.د هبة شوقى - فسيولوجي ا.د احمد عمرو - جراحة اعصاب ا.د هبة مصطفى - باطنة
Lymphatic	ا.د داليا فتحى هستولوجي ا.د أميمة خورشيد –فارماكولوجي ا.د أيمن ابو العينين- تشريح	

Specifications Template

Coordinator Committee Workshops
13-2-2018
12-3-2018

Specifications

System

Block title:

Code:

Departments:

Sharing Depart
1-
2-
3-
4-

Academic year:

Semester:

Date of specification app

- Credit points:
- Allocated Marks:
- Duration:
- Total hours:
  - Contact hours:
  - Non-contact ho

1- Overall aim of the blo

.
.

2- Competency areas cov

.
.

3- intended learning out

ILOs
a-Knowledge and understandin
a1.Recognize....
a2.Identify...
a3.....
a4....
b- Practical/clinical
b1.Perform...
b2.Titate...
b3....
b4...
c- Professional and behavioral s
d- Communication skills
e- Intellectual skills
f-General and transferrable skil

4- Block content, contac

Topic	Contact Hours	Lect (h
Total		

Block contents

Lectures:
. Topic 1
. Topic 2

Practical / Clinical Sessions
. Topic 1
. Topic 2

Tutorial / Small Group Discussio
. Topic 1
. Topic 2

Problem Based and Team Based L
. Topic 1
. Topic 2

5- Teaching & leaning me

Lectures: Groups / Numbers / Fre
Tutorials / Small Group Discussion
PBL / TBL: Groups / Numbers / Fr

Time Plan

Topics	Ti
Lectures	1 hour
Practical/Clinical	
Tutorial / SGT	
PBL / TBL	
Assignments	
Revision, Training & Exams	
Total	

6- Assessment plan and b

6-A) Attendance Criteria

6-B) Assessment Tools

6-C) Time Schedule

6-D) Grading System

Topics	Allocated Marks	En
Total		

Topics Covered	Marks	ILOs Covered			Written Exams Types of Questions				OSPE/OSCE
		Recall	Understanding	Intellectual	MCQ	SAQ	Cases	Others	
	Total								

6-E) Examination Description

Examination	Description
Continuous Assessment	
Mid-Year	
Final Written OSPE/OSCE	

7- Readings and references:

.
.

8- Facilities required for teaching & learning

Block Coordinator:

Block Writing Committee:

1-
2-

Date:

Module designing progression checklist

Module title:

Sharing Departments:

Module coordinator (MC) steering guide	Check box
1-Means of Communication between members	
• Meetings (state No. Of meetings) • Virtual e.g. WhatsApp	
2-Clinician member of the module	
• Actively participated in module ILOs establishment • Involvement in integrated sessions formulation; projecting on common community based problems	
3-Learning outcomes	
• Outcomes are developed adherent to program competencies • Relation of topics to Program competencies	
5- Prepare a comprehensive Timetable	
• Similar topics of different disciplines are taught same day or week	
6-Teaching Methods	
• Lectures • Practical or clinical sessions • Tutorial sessions (small group teaching) • Integrated sessions (integrated cases between all disciplines) • Skill labs (clinical clerkships) • Others (please mention)	

Course Intended Learning Outcomes

TAXONOMY
OF
EDUCATIONAL OBJECTIVES

The Classification of Educational Goals

HANDBOOK 1 COGNITIVE DOMAIN

By

A Committee of College
and University Examiners

Benjamin S. Bloom, Editor
University Examiner
University of Chicago

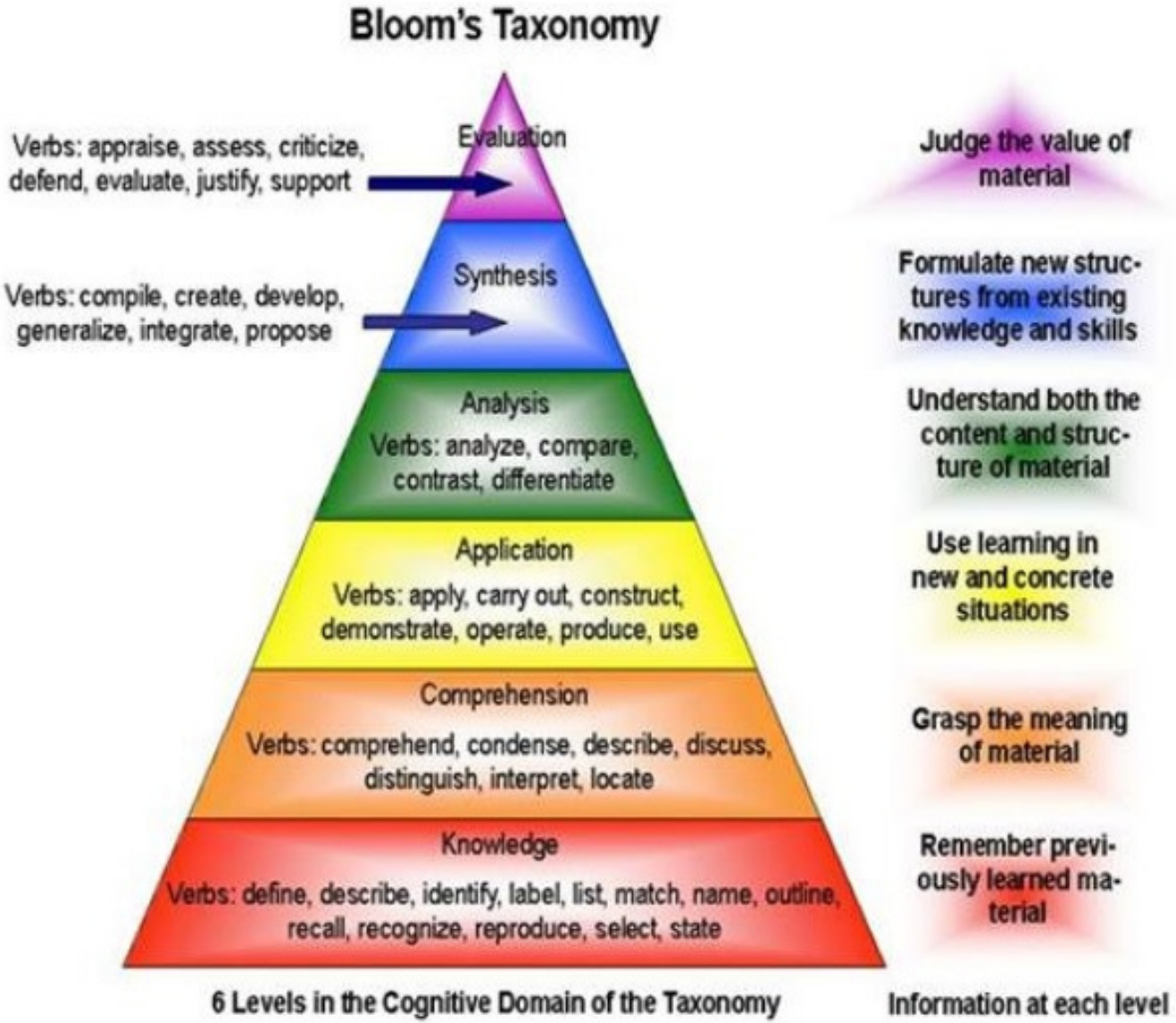
Max D. Engelhart
Director, Department of Examinations
Chicago City Junior Colleges

Edward J. Furst
Chief, Evaluation and Examination Division
University of Michigan

Walker H. Hill
Examiner, Board of Examiners
Michigan State University

David R. Krathwohl
Coordinator of Research
Bureau of Research and Service
Michigan State University

LONGMANS


Bloom's Taxonomy
Verbs: appraise, assess, criticize, defend, evaluate, justify, support
Evaluation
Judge the value of material
Verbs: compile, create, develop, generalize, integrate, propose
Synthesis
Formulate new structures from existing knowledge and skills
Analysis
Verbs: analyze, compare, contrast, differentiate
Understand both the content and structure of material
Application
Verbs: apply, carry out, construct, demonstrate, operate, produce, use
Use learning in new and concrete situations
Comprehension
Verbs: comprehend, condense, describe, discuss, distinguish, interpret, locate
Grasp the meaning of material
Knowledge
Verbs: define, describe, identify, label, list, match, name, outline, recall, recognize, reproduce, select, state
Remember previously learned material
6 Levels in the Cognitive Domain of the Taxonomy
Information at each level

David R. Krathwohl

A Revision of Bloom's Taxonomy: An Overview

THE TAXONOMY OF EDUCATIONAL OBJECTIVES is a framework for classifying statements of what we expect or intend students to learn as a result of instruction. The framework was conceived as a means of facilitating the exchange of test items among faculty at various universities in order to create banks of items, each measuring the same educational objective. Benjamin S. Bloom, then Associate Director of the Board of Examinations of the University of Chicago, initiated the idea, hoping that it would reduce the labor of preparing annual comprehensive examinations. To aid in his effort, he enlisted a group of measurement specialists from across the United States, many of whom repeatedly faced the same problem. This group met about twice a year beginning in 1949 to consider progress, make revisions, and plan the next steps. Their final draft was published in 1956 under the title, *Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook I: Cognitive Domain* (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956).[1] Hereafter, this is referred to as the original Taxonomy. The revision of this framework, which is the subject of this issue of *Theory Into Practice,* was developed in much the same manner 45 years later (Anderson, Krathwohl, et al., 2001). Hereafter, this is referred to as the revised Taxonomy.[2]

David R. Krathwohl is Hannah Hammond Professor of Education Emeritus at Syracuse University.

Bloom saw the original Taxonomy as more than a measurement tool. He believed it could serve as a

- common language about learning goals to facilitate communication across persons, subject matter, and grade levels;
- basis for determining for a particular course or curriculum the specific meaning of broad educational goals, such as those found in the currently prevalent national, state, and local standards;
- means for determining the congruence of educational objectives, activities, and assessments in a unit, course, or curriculum; and
- panorama of the range of educational possibilities against which the limited breadth and depth of any particular educational course or curriculum could be contrasted.

The Original Taxonomy

The original Taxonomy provided carefully developed definitions for each of the six major categories in the cognitive domain. The categories were *Knowledge*, *Comprehension, Application, Analysis, Synthesis,* and *Evaluation.*[3] With the exception of *Application*, each of these was broken into subcategories. The complete structure of the original Taxonomy is shown in Table 1.

The categories were ordered from simple to complex and from concrete to abstract. Further, it was assumed that the original Taxonomy represented a cumulative hierarchy; that is, mastery of

THEORY INTO PRACTICE, Volume 41, Number 4, Autumn 2002

KNOWING or REMEMBERING	COMPREHENDING or UNDERSTANDING	APPLYING	ANALYZING	SYNTHESIZING or EVALUATING	CREATING
Cite	Arrange	Adapt	Analyze	Assess	Adapt
Define	Associate	Apply	Appraise	Assemble	Anticipate
Draw	Classify	Compute	Detail	Build	Collaborate
Enumerate	Convert	Coordinate	Determine	Choose	Combine
Find	Describe	Demonstrate	Calculate	Compare	Communicate
Label	Discuss	Develop	Categorize	Construct	Compose
List	Explain	Dramatize	Classify	Debate	Construct
Locate	Exemplify	Employ	Compare	Estimate	Create
Match	Identify	Establish	Contrast	Formulate	Design
Memorize	Interpret	Examine	Correlate	Generate	Facilitate
Name	Locate	Extrapolate	Critique	Hypothesize	Forecast
Recall	Match	Illustrate	Defend	Integrate	Generate
Recite	Paraphrase	Implement	Detect	Judge	Initiate
Record	Report	Instruct	Dissect	Justify	Model
Recognize	Research	Interview	Distinguish	Manage	Negotiate
Select	Sort	Manipulate	Examine	Organize	Organize
State	Summarize	Modify	Inspect	Predict	Perform
Tabulate	Translate	Operate	Inventory	Prescribe	Plan
		Order	Research	Prepare	Produce
		Practice	Solve	Prioritize	Propose
		Predict	Summarize	Produce	Reconcile
		Prepare	Test	Propose	Revise
		Produce		Recommend	Resolve
		Utilize		Structure	Structure
				Synthesize	Substitute
Teaching Strategies	**Teaching Strategies**	**Teaching Strategies**	**Teaching Strategies**	**Teaching Strategies**	**Teaching Strategies**
Lecture	Questions	Practice	Problem solving	Projects	Simulations
Video	Discussion	Demonstrations	Case Studies	Problem solving	Critiques
Illustrations	Review	Presentations	Critical Incidents	Case studies	Complex case study
Examples	Test	Projects	Discussion	Plan development	Design and development
Visuals	Reports	Role play	Questioning	Constructing	Product generation
	Exercises	Micro-teach	Test	Simulation	Producing

lower order thinking → higher order thinking

BLOOM'S TAXONOMY OF LEARNING OBJECTIVES (revised)

UNMC faculty development www.unmc.edu/facdev

Anderson, L.W., Krathwohl, D.R., Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., Wittrock, M.C. (2001). *A Taxonomy for Learning, Teaching, and Assessing: A revision of Bloom's Taxonomy of Educational Objectives*. New York: Pearson, Allyn & Bacon.

Bloom, B.S. (Ed.). Engelhart, M.D., Furst, E.J., Hill, W.H., Krathwohl, D.R. (1956). *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain*. New York: David McKay Co Inc.

Writing ILO's

TEACHING & LEARNING WITH PLYMOUTH UNIVERSITY

Designing Programme Modules: Guidance

This Guide has been produced
http://www1.plymouth.ac.uk/curun

Updated: November 2013

Section 8: Verbs for Writing Learning Outcomes

Knowledge and Understanding (subject specific)

acquire	illustrate	recognise
calculate	indicate	record
clarify	interpret	recount
define	judge	refer to
describe	label	reproduce
disclose	list	respond to
discover	make observations	restate
discuss	measure	reveal
draw on	name	state
explain	outline	
identify	recall	

Cognitive/Intellectual Skills (generic)

analysis		
account	criticise	extrapolate
analyse	debate	interpolate
appraise	distinguish	predict
categorise	draw	question
compare	draw distinctions	show insight
comprehend	elaborate	translate
contrast	examine	underline

Synthesis

arrange	extrapolate	prove
carry out	formulate	redefine
combine	initiate	reformat
conceptualise	invent	relate
construct	organise	research
create	perform	suggest
demonstrate	plan	synthesise
design	prepare	transfer
develop	produce	transform
experiment	propose	

Evaluation

advocate	conclude	estimate
appraise	critically evaluate	judge
assess	criticise	measure
challenge	discriminate	recommend
compare	distil	resolve

Application

apply	draw	refine
assemble	exhibit	select
construct	generate	solve
debate	implement	use
deconstruct	plan	
derive	produce	

Key/Transferable Skills (generic)

working with others		
accommodate	decide	manage
acknowledge others	delegate	meet expectations
arbitrate	direct	motivate
assist	facilitate	negotiate
collaborate	feedback	participate
confirm	give/receive ideas	persuade
confront	guide	respond
consider others	include	set goals/objectives
construct	initiate	support
co-operate	interact	
co-ordinate	lead	

Section 8: Verbs for Writing learning Outcomes (continued)

Information Technology / Learning Resources

access	explore	search
appraise	locate	select
collate	manage	work to deadlines
develop & derive new information	research	

Improve Own Learning and Performance

achieve	evidence	observe
action plan	identify	plan/meet own targets
challenge received opinion	improve	recognise
criticise	judge	reflect
develop criteria	justify	review progress
evaluate	monitor	uncover

Management of Information

access	extrapolate	prioritise
apply	identify	report
compare/contrast	make sense of	research
critically analyse	memorise	select
decide	obtain / summarise	select strategies
explore	plan	use

Autonomy

apply	formulate	propose
assess	identify	recognise
choose	implement	resolve
define	plan	select

Communication

advocate	explain	network
argue	express	present
articulate	formalise	question
debate	illustrate	rebut
defend	involve	respond
demonstrate	justify	sense problem solving
display ideas	liaise	summarise
examine	listen	

Problem Solving

adapting	experiment	persuade
apply given methods	generate ideas	present
create	implement	propose
define	justify	resolve
evaluate	perceiving	select appropriate methods
execute	perform	solve

Application of Number

calculate	interpret	plan
derive	justify	present findings

Practical Skills

(subject specific i.e. your discipline will have or could create its own range of verbs)

categorise	demonstrate	operate
collect	design	perform
conduct	disseminate	produce
construct	draw	use

Professional/Employment Related

Many of the skills above – particularly key/transferable skills are difficult to apply and assess in the university setting. The work place or year abroad, (subject related or not) does offer the opportunities.

develop	plan career	facilitate
monitor	prioritise	introduce
establish	report	involve
observe	research career	listen
perform	review	

Plymouth University November 2013

a- Knowledge and understanding

b- Practical & clinical skills

c- Professional attitude & behavioral skills

d- Communication skills

e- Intellectual skills

f- General and transferrable skills

Competency Area I
Graduate as a health care provider

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competencies	Course ILOs
1.1. Take and record a structured, patient centered history	MED-422-b.1 Interview and document a structured patient history
1.3. Assess the mental state of the patient.	PSY-313-a.1 Identify common types of cognitive impairments PSY-413-b.2 Assess the mental and psychological status of the patient..
1.4. Perform appropriately timed full physical examination of patients appropriate to the age, gender, and clinical presentation of the patient while being culturally sensitive.	SUR-523-b.2 Conduct full physical assessment for different age groups and genders in acute and chronic clinical conditions
1.5. Prioritize issues to be addressed in a patient encounter.	MED-522-b.9 Prioritize the collected data during history taking and clinical examination. from the patient medical problems and their differential diagnoses-b,12
1.6. Select the appropriate investigations and interpret their results taking into consideration cost/ effectiveness factors.	INV-314-c.7 Follow the guide lines in choosing the proper investigation, taking in consideration the cost effectiveness factors.

Competency Area I
Graduate as a health care provider

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competencies	Course ILOs
1.14. Respect patients' rights and involve them and /or their families/carers in management decisions.	ETH-328-d.4 Respect patient's right to know and share in management decision.
1.15. Provide the appropriate care in cases of emergency, including cardio-pulmonary resuscitation, immediate life support measures and basic first aid procedures.	MED-522-b,11 Follow the guidelines necessary for managing emergencies, including cardio-pulmonary resuscitation, immediate life support measures and basic first aid procedures.
1.16. Apply the appropriate pharmacological and nonpharmacological approaches to alleviate pain and provide palliative care for seriously ill people, aiming to relieve their suffering and improve their quality of life.	PLL-421-b.10 Adopt the guidelines for appropriate therapeutic modalities for palliative care and pain management.
1.17. Contribute to the care of patients and their families at the end of life, including management of symptoms, practical issues of law and certification.	PLL-421-d.2 Support the patients and their families at end of life, as regards alleviation of symptoms and recognition of legal factors.

Competency Area II
Graduate as a health promoter

Competency (2) The graduate as a health promoter *By the end of the program, the graduate will be able to:*

Key Competency	Course ILOs
2.2 Recognize the economic, psychological, social, and cultural factors that interfere with wellbeing.	COM-418-a.8 Integrate variable factors including economic, psychological, social, and cultural issues that influence the individual wellbeing.
2.3 Discuss the role of nutrition and physical activity in health.	NRT-419-a.1 Emphasize on the role of nutrition and healthy life style in maintenance of health and prevention of disease.
2.4 Identify the major health risks in his/her community, including demographic, occupational and environmental risks; endemic diseases, and prevalent chronic diseases.	COM-418-a,11 Understand the causes behind the diseases chronicity and endemicity in a certain population. COM-418-a.13 Outline the epidemiologic principles and the effect of social and demographic patterns on disease and vulnerability.

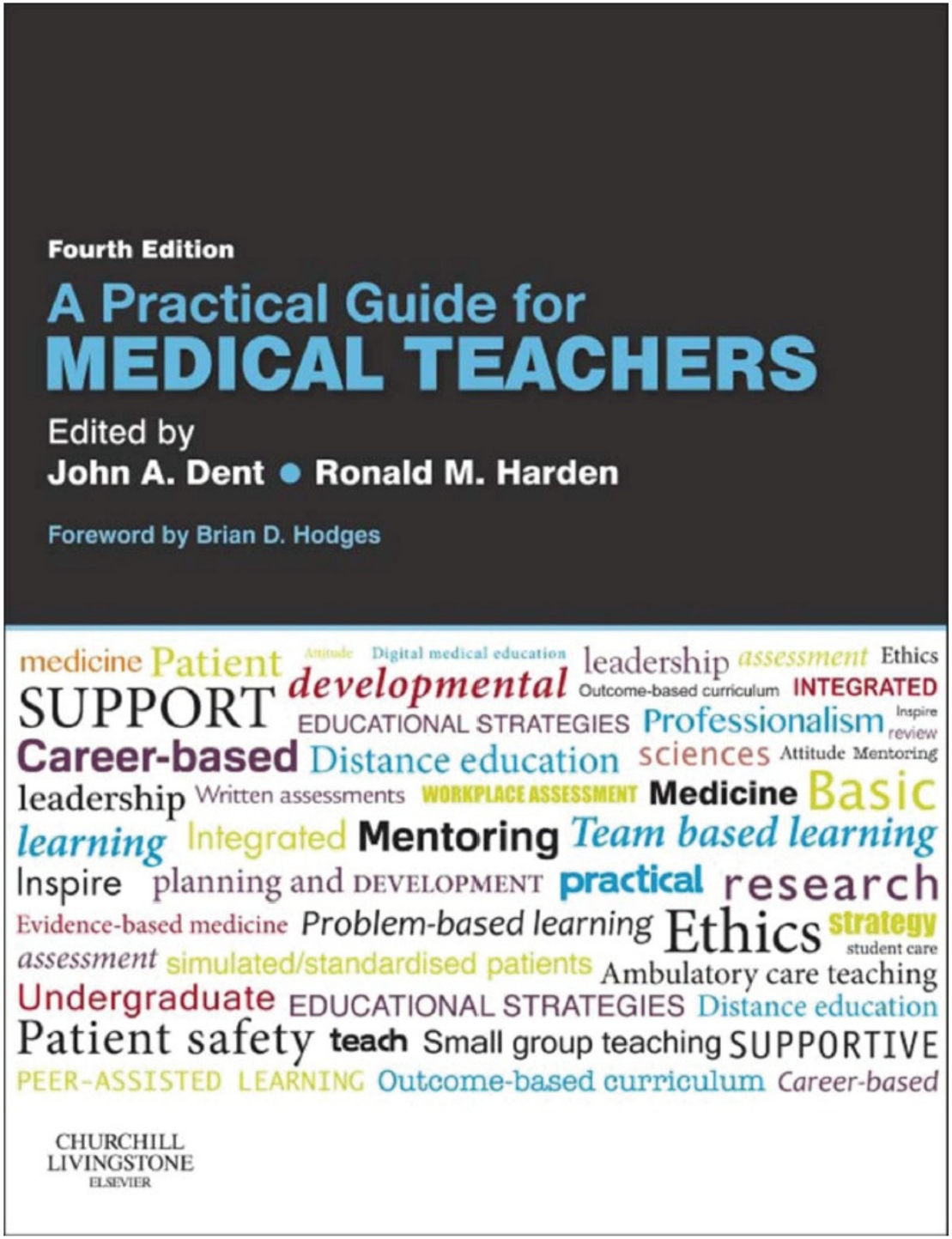
Competency Area II

Graduate as a health promoter

Competency (2) The graduate as a health promoter *By the end of the program, the graduate will be able to:*

Key Competency	Course ILOs
2.5 Describe the principles of disease prevention, and empower communities, specific groups or individuals by raising their awareness and building their capacity.	COM-418-a.4 Describe the Egyptian health systems and different population-based approaches of health care including disease burden, quality of life and well-being.
2.8 Identify vulnerable individuals that may be suffering from abuse or neglect and take the proper actions to safeguard their welfare.	TOX-317-a.5 Recognize individuals exposed to abuse or negligence.
2.9 Adopt suitable measures for infection control.	EPE-333-b.7 Adopt infection control measures and safety procedures

Courses, Teaching & Assessment


Fourth Edition
A Practical Guide for
MEDICAL TEACHERS
Edited by
John A. Dent • Ronald M. Harden
Foreword by Brian D. Hodges
medicine Patient Attitude Digital medical education leadership assessment Ethics
SUPPORT developmental Outcome-based curriculum INTEGRATED
EDUCATIONAL STRATEGIES Professionalism Inspire review
Career-based Distance education sciences Attitude Mentoring
leadership Written assessments WORKPLACE ASSESSMENT Medicine Basic
learning Integrated Mentoring Team based learning
Inspire planning and DEVELOPMENT practical research
Evidence-based medicine Problem-based learning Ethics strategy
student care
assessment simulated/standardised patients Ambulatory care teaching
Undergraduate EDUCATIONAL STRATEGIES Distance education
Patient safety teach Small group teaching SUPPORTIVE
PEER-ASSISTED LEARNING Outcome-based curriculum Career-based
CHURCHILL
LIVINGSTONE
ELSEVIER

Teaching methods

I- Learning situations:

- **Lectures**
- **Small-group teaching:** Aims to explore the key concepts in the lectures and readings with a practical emphasis to help students with complicated material. It requires active participation, purposeful activity, and face-to-face contact.
- **Bedside teaching:** The Traditional clinical teaching bringing together the 'learning triad' of patient, student and clinician/tutor in a particular clinical environment.
- **Ambulatory care teaching:** refers to any place where patients attend healthcare facilities without being admitted as inpatients.
- **Community based teaching:** describes curricula that are based on addressing the health needs of the local community and preparing graduates to work in that community. Can be delivered in tertiary centers. focuses on the care provided to patients both before the decision to refer to a tertiary hospital and after the decision to discharge the patient from such care.

Dent & Harden (2013)

Teaching methods

II- Educational strategies

- **Problem based learning**
- **Team based learning:** provides students with opportunities to apply conceptual knowledge through a sequence of events that includes individual work, team-work and immediate feedback.
- **Integrated sessions**
- **Simulated based teaching** any educational activity that utilizes simulative tools and methods in order to create learning opportunities for participants.

Dent & Harden (2013)

Assessment methods

I-Written assessments

- **Short answer open ended questions**: This is an open-ended question type which requires the candidate to generate a short answer of often no more than one or two words.
- **Essay questions** are open-ended types of questions that require a longer answer. Ideally, they are used to ask the candidate to set up a reasoning process, to evaluate a given situation.
- **True-False questions**
- **Multiple choice questions** single-best-option multiplechoice or A-type.) :the most well-known item format.
- **Multiple True False questions** more than one option can be ticked by the candidate.
- **Extended Matching Questions:** Extended-matching items consist of a theme description, a series of options (up to 26), a lead in and a series of short cases.
- **Key feature approach questions**: short, clearly described case or problem an a limited number of questions
- **Script concordance test questions**: ill-defined problems and method called aggregate scoring. A clinical scenario in which no all data are provided for the solution of the problem is presented.

Dent & Harden (2013)

Assessment methods

II-Performance and work place assessment

- **Objective Structured Clinical Examination (OSCE)** s typically used in high stakes summative assessments
- **Mini Clinical Evaluation Exercise (Mini-CEX)**: An assessor directly observes the practitioner's performance in 'real' clinical encounters with patients in the workplace. He or she then discusses diagnosis and management with the practitioner and gives them feedback on the encounter
- **Case Based Discussion (CBD) Or Chart recall Discussion (CSR):** It is a structured interview In which ***practitioners*** discuss aspects of a case in which they have been involved in order to explore their underlying reasoning, decision making and ethical understanding. It can be used in a variety of settings, such as clinics, wards or assessment units, and different clinical problems can be discussed.
- **Direct Observation of procedural skills (DOPS):** The ***practitioner*** is directly observed by an assessor while undertaking a procedure on a real patient.
- **Multi-Source Feedback (MSF)**: collect structured judgements of those who work with, or have experience of, the ***practitioner*** and feed these back in a systematic way, building up a picture of individual practice. Judges can include both senior and junior colleagues, nurses, administrative staff, medical students and patients, depending on the tool used. All judges remain anonymous, and their scores and comments are fed back to the trainee.

Dent & Harden (2013)

Competency Area I

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
1.1. Take and record a structured, patient centered history	COM-418 Community Medicine ENT-316 Ear, Nose & Throat EPE-333 Early Patient Encounter 4 FML- 420 Family medicine MED-422 Medicine 1 MED-522 Medicine 2 OBG-425 Women's Health OPH-315 Eye Disorders PED-424 Child's Health SUR-423 Surgery 1 SUR-523 Surgery 2	Bedside teaching. Ambulatory care teaching Integrated sesions Team based learning	**Performance** Mini Clinical Evaluation Exercise (Mini-CEX) OSCE
1.2. Adopt an empathic and holistic approach to the patients and their problems.	CMS-129 Communication Skills 1 CMS-229 Communication Skills 2 ENT-316 Ear, Nose & Throat ETH-328 Medical Ethics & Law 3 MED-522 Medicine 2 MPF-526 Medical Professionalism 5 OBG-425 Women's Health OPH-315 Eye Disorders PED-424 Child's Health PSY-313 Behavioral & Cognitive Sciences PSY-413 Psychiatry SUR-523 Surgery 2	Integrated sessions Small group teaching Bedside teaching. Team based learning Simulated based teaching	**Written** MCQs True and false **Performance** Mini Clinical Evaluation Exercise (Mini-CEX) OSCE
1.3. Assess the mental state of the patient.	PSY-313 Behavioral & Cognitive Sciences PSY-413 Psychiatry MED-522 Medicine 2	Interactive lectures. Small group teaching Tutorials Bedside teaching. Ambulatory care teaching Videos	**Performance** Mini Clinical Evaluation Exercise (Mini-CEX) OSCE

Competency Area I

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
1.4. Perform appropriately timed full physical examination of patients appropriate to the age, gender, and clinical presentation of the patient while being culturally sensitive.	EPE-130 Early Patient Encounter 1 EPE-231 Early Patient Encounter 2 EPE-232 Early Patient Encounter 3 EPE-333 Early Patient Encounter 4 OPH-315 Eye Disorders ENT-316 Ear, Nose & Throat FML-420 Family Medicine PED-424 Child's Health OBG-425 Women's Health MED-422 Medicine 1 MED-522 Medicine 2 SUR-423 Surgery 1 SUR-523 Surgery 2	Bedside teaching Integrated sessions Problem based learning Small group teaching Team based learning Simulated Based Learning	**Performance** Mini Clinical Evaluation Exercise (Mini-CEX) OSCE Direct Observation of procedural skills (DOPS)
1.5. Prioritize issues to be addressed in a patient encounter.	ENT-316 Ear, Nose & Throat MED-422 Medicine 1 MED-522 Medicine 2 OBG-425 Women's Health OPH-315 Eye Disorders PED-424 Child's Health RSP-208 Respiratory System SUR-423 Surgery 1 SUR-523 Surgery 2	Lectures Tutorials Small group teaching Team based learning	**Performance** Mini Clinical Evaluation Exercise (Mini-CEX) **Written** Short answer questions MCQs Extended matching questions (EMQs) True and false
1.6. Select the appropriate investigations and interpret their results taking into consideration cost/ effectiveness factors.	INV-314 Investigative medicine PED-424 Child's Health OBG-425 Women's Health MED-422 Medicine 1 MED-522 Medicine 2 SUR-423 Surgery 1 SUR-523 Surgery 2	Lectures Tutorials Bedside teaching Integrated sessions Small group teaching Team based learning	**Performance** OSCE/OSPE **Written** Short answer questions MCQs Extended matching questions (EMQs) True and false

Competency Area I

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
1.7. Recognize and respond to the complexity, uncertainty, and ambiguity inherent in medical practice.	CMS-129 Communication Skills 1 CMS-229 Communication Skills 2 COM-418 Community Medicine MED-522 Medicine 2 OBG-425 Women's Health PED-424 Child's Health PSY-313 Behavioral & Cognitive Sciences SUR-523 Surgery 2	Integrated sessions Team based learning Seminars Lectures Tutorials Small group teaching Case based learning	**Written** Short answer questions MCQs Extended matching questions (EMQs) True and false
1.8. Apply knowledge of the clinical and biomedical sciences relevant to the clinical problem at hand.	CVS-207 Cardiovascular System DIG-311 Digestive System & Liver END-209 Endocrine System EPE-130 Early Patient Encounter 1 EPE-231 Early Patient Encounter 2 EPE-232 Early Patient Encounter 3 EPE-333 Early Patient Encounter 4 HEM-106 Hematopoietic S. & Immunity INT-101 Normal structure of the human body INT-102 Introduction to biomedical sciences INT-103 Principles of disease & drug therapy MSK-105 Musculoskeletal 1 MSK-205 Musculoskeletal 2 NEU-104 Neuroscience 1 NEU-204 Neuroscience 2 RPR-210 Reproductive System RSP-208 Respiratory System URG-312 Urogenital System	Lectures Integrated sessions Case based learning Interactive lectures Audiovisual materials	**Written** MCQs Extended matching questions (EMQs) Short answer questions True and false

Competency Area I

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
1.9. Retrieve, analyze, and evaluate relevant and current data from literature, using information technologies and library resources, in order to help solve a clinical problem based on evidence (EBM).	CMP-235 Computer ENT-316 Ear, Nose & Throat INV-314 Investigative medicine MED-522 Medicine 2 OBG-425 Women's Health OPH-315 Eye Disorders PED-424 Child's Health RES-434 Medical Research & EBM 1 RES-534 Medical Research & EBM 2 SSC-020 Information Technology SSC-021 Computer Programming SUR-523 Surgery 2 TOX-317 Clinical toxic. & Legal Medicine	Audiovisual materials Case based learning Computer assisted learning E-learning Practical lab Seminars	**Written** Short answer questions MCQs **Performance** Practical exam OSCE/OSPE
1.10. Integrate the results of history, physical and laboratory test findings into a meaningful diagnostic formulation.	ENT-316 Ear, Nose & Throat INV-314 Investigative medicine MED-522 Medicine 2 OBG-425 Women's Health OPH-315 Eye Disorders PED-424 Child's Health RSP-208 Respiratory System SUR-523 Surgery 2	Lectures Tutorials Case based learning Small group teaching Team based learning	**Performance** Mini Clinical Evaluation Exercise (Mini-CEX) OSCE **Written** MCQs
1.11. Perform diagnostic and intervention procedures2 in a skillful and safe manner, adapting to unanticipated findings or changing clinical circumstances.	COM-418 Community Medicine FML-420 Family Medicine INT-103 Principles of disease & drug therapy INV-314 Investigative medicine MED-522 Medicine 2 OBG-425 Women's Health PED-424 Child's Health PLL-421 Palliative Medicine & Oncology SUR-523 Surgery 2	Audiovisual materials Simulated based teaching Lectures Practical lab Small group teaching Tutorials	**Performance** Direct Observation of procedural skills (DOPS) **Written** MCQs True and false

Competency Area I

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
1.12. Adopt strategies and apply measures that promote patient safety	COM-418 Community Medicine FML-420 Family Medicine INT-103 Principles of disease & drug therapy INV-314 Investigative medicine RSP-208 Respiratory System	Lectures Tutorials Small group teaching	**Performance** Direct Observation of procedural skills (DOPS) **Written** Short answer questions MCQs True and false
1.13. Establish patient-centered management plans in partnership with the patient, his/her family and other health professionals as appropriate, using Evidence Based Medicine in management decisions.	CMS-129 Communication Skills 1 CMS-229 Communication Skills 2 MED-422 Medicine 1 MED-522 Medicine 2 OBG-425 Women's Health PED-424 Child's Health RES-434 Medical Research & EBM 1 RES-534 Medical Research & EBM 2 SUR-423 Surgery 1 SUR-523 Surgery 2	Integrated Sessions Small group teaching Team based learning Community based teaching	**Written** Short answer questions MCQs True and false
1.14. Respect patients' rights and involve them and /or their families/carers in management decisions.	EHT-128 Medical Ethics & Law 1 ETH-228 Medical Ethics & Law 2 ETH-328 Medical Ethics & Law 3	Lectures Tutorials Small group teaching	**Written** Short answer questions True and false MCQs
1.15. Provide the appropriate care in cases of emergency, including cardio-pulmonary resuscitation, immediate life support measures and basic first aid procedures.	EPE-333 Early Patient Encounter 4 MED-422 Medicine 1 MED-522 Medicine 2 OBG-425 Women's Health PED-424 Child's Health SUR-423 Surgery 1 SUR-523 Surgery 2	Simulated based teaching Team based learning Audiovisual materials	**Performance** Direct Observation of procedural skills (DOPS) **Written** Short answer questions MCQs True and false

Competency Area I

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
1.16. Apply the appropriate pharmacological and nonpharmacological approaches to alleviate pain and provide palliative care for seriously ill people, aiming to relieve their suffering and improve their quality of life.	PLL-421 Palliative Medicine & Oncology PSY-413 Psychiatry MED-522 Medicine 2	Lectures Bedside teaching Integrated sessions Small group teaching Team based learning E-learning	**Performance** OSCE/OSPE **Written** MCQs MEQs True or False Short answer questions
1.17. Contribute to the care of patients and their families at the end of life, including management of symptoms, practical issues of law and certification.	PLL-421 Palliative Medicine & Oncology PSY-413 Psychiatry CMS-129 Communication Skills 1 CMS-229 Communication Skills 2	Lectures Small group teaching Team based learning Community based teaching	**Performance** OSCE/OSPE **Written** Short answer questions MCQs MEQs True and false

Competency Area II

Competency (2) The graduate as a health promoter *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
2.1 Identify the basic determinants of health and principles of health improvement.	COM-418 Community Medicine FML-420 Family Medicine SSC-018 Health Economics	Lectures Tutorials Small group teaching	**Written** Short answer Short answer questions True and false MCQs
2.2 Recognize the economic, psychological, social, and cultural factors that interfere with wellbeing.	COM-418 Community Medicine FML-420 Family Medicine PSY-413 Psychiatry SSC-018 Health Economics	Integrated sessions Interactive lectures Tutorials	**Written** Short answer True and false MCQs
2.3 Discuss the role of nutrition and physical activity in health.	INT-102 Introduction to biomedical sciences NTR-419 Clinical Nutrition FML-420 Family Medicine MED-522 Medicine 2	Integrated sessions Lectures Tutorials Small group teaching Case-based learning	**Written** Short answer Short answer questions True and false MCQs Extended matching questions (EMQs)
2.4 Identify the major health risks in his/her community, including demographic, occupational and environmental risks; endemic diseases, and prevalent chronic diseases.	COM-418 Community Medicine FML-420 Family Medicine OBG-425 Women's Health PED-424 Child's Health RSP-208 Respiratory System TOX-317 Clinical toxicology & Legal Medicine	Integrated sessions Lectures Tutorials Small group teaching	**Written** Short answer Short answer questions True and false MCQs Extended matching questions (EMQs)

Competency Area II

Competency (2) The graduate as a health promoter *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
2.5 Describe the principles of disease prevention, and empower communities, specific groups or individuals by raising their awareness and building their capacity.	COM-418 Community Medicine FML-420 Family Medicine RSP-208 Respiratory System	Integrated sessions Lectures Tutorials Small group teaching	**Written** Short answer Short answer questions True and false MCQs Extended matching questions (EMQs)
2.6 Recognize the epidemiology of common diseases within his/her community, and apply the systematic approaches useful in reducing the incidence and prevalence of those diseases.	COM-418 Community Medicine FML-420 Family Medicine	Integrated sessions Lectures Tutorials Small group teaching	**Written** Short answer Short answer questions True and false MCQs Extended matching questions (EMQs)
2.7 Provide care for specific groups including pregnant women, newborns and infants, adolescents and the elderly.	COM-418 Community Medicine FML-420 Family Medicine PED-424 Child's Health OBG-425 Women's Health MED-522 Medicine 2	Bedside teaching Integrated sessions Lectures Tutorials Small group teaching	**Performance** OSCE/OSPE Mini Clinical Evaluation Exercise (Mini-CEX) **Written** Short answer Short answer questions True and false MCQs Extended matching questions (EMQs)

Competency Area II

Competency (2) The graduate as a health promoter *By the end of the program, the graduate will be able to:*

Key Competency	Courses	Teaching/Learning	Assessment
2.8 Identify vulnerable individuals that may be suffering from abuse or neglect and take the proper actions to safeguard their welfare.	COM-418 Community Medicine FML-420 Family Medicine TOX-317 Clinical toxic & Legal Medicine	Integrated sessions Lectures Tutorials Small group teaching	**Written** Short answer Short answer questions True and false MCQs Extended matching questions (EMQs)
2.9 Adopt suitable measures for infection control.	COM-418 Community Medicine EPE-232 Early Patient Encounter 3 TOX-317 Clinical toxic & Legal Medicine MED-522 Medicine 2 SUR-523 Surgery 2	Lectures Tutorials Small group teaching Audiovisual	**Performance** Direct Observation of procedural skills (DOPS) OSCE **Written** Short answer Short answer questions True and false MCQs Extended matching questions (EMQs)

Milestones

MILESTONES

- They are significant points in learner development
- They provide narrative descriptors of competencies and key competencies along a developmental continuum
- They enable both learner and program determine individual trajectories of development in narrative terms
- They lay out a framework of observable behaviors and other attributes associated with development of skills, knowledge and behaviors

Holmboe et al (2016)

Accreditation Council for Graduate Medical Education "ACGME"

Writing Milestones

Level 1	Level 2	Level 3	Level 4	Level 5
Expectations for a student at first year after entry	Expectations for a student who passes entry but is performing at a lower level than midway of his study	Expectations for a student midway of his study	Expectations for a student nearing graduation	Expectations for a student at graduation
End of Year 1	End of Phase 1	End of Clinical Clerkships I	End of Clinical Clerkships II	End of Year 5

Adapted from Holmboe et al (2016), ACGME Milestones Handbook

Milestones

Competency (1) The graduate as a health care provider *By the end of the program, the graduate will be able to:*

Key Competency	Year 1	Phase 1	Clinical Clerkships I	Clinical Clerkships II	Year 5
1.1. Take and record a structured, patient centered history	Acquires General Medical History	Acquires Basic Specialty Specific Medical History	Acquires Full Medical History integrating Medical & Psychological Elements	Acquires & Present Prioritized Medical History Eliciting Inormation Not Volunteered by Patient	Acquires & Present Full Prioritized Medical History With Full Management Plan
1.6. Select the appropriate investigations and interpret their results taking into consideration cost/ effectiveness factors.	Describes Basic Principles of Laboratory & Tissue Sampling Investigations	Describes Principles of Laboratory Radiological, Pathological, Nuclear Scanning Investigations	Describes Disease-Specific Plans of Investigations	Understands Economical Factors Influencing Choice of Investigative Tools	Constructs a full Investigatory Plan taking into consideration Cost/Benefit Ratio
1.16. Apply the appropriate pharmacological and nonpharmacological approaches to alleviate pain and provide palliative care for seriously ill people, aiming to relieve their suffering and improve their quality of life.	Describes the Physiological & Pharmacologic al Basis of Pain Management	Describes the Pharmacologi cal Basis of Oncological Management	Applies basic principles in choosing Lines of Management to Alleviate Different Symptoms	Understands different lines of Palliative care for Seriously ill Patients	Select and Use Appropriate Approaches to Provide Palliation To Relieve Suffering and Improve their quality of life

Milestones

Competency (2) The graduate as a health promoter *By the end of the program, the graduate will be able to:*

Key Competency	Year 1	Phase 1	Clinical Clerkships I	Clinical Clerkships II	Year 5
2.1 Identify the basic determinants of health and principles of health improvement.	Understands general Principles of body functions and disease Mechanisms	Understands System Related Functions & Health Problems	Describes different health aspects of special senses and substance abuse	Identifies health care system improvement requirements and group specific health needs	Understands needs for global health enhancement .
2.3 Discuss the role of nutrition and physical activity in health.	Describes the Biomedical Basis of Metabolism, Vitamins & Nutrients	Describes the Basic Body Needs, Muscle Fuel, Energy Stores	Understands GIT & Hepatobiliary Role in Maintenance of Body Health	Understands Role of Nutrition in Causing, Preventing and Dietary Managing Malnutrition Disorders & Non-communicable Diseases. Identifies different types used in clinical nutrition	Select Appropriate Nutritional Plan for Different Groups and/or Different Illnesses
2.7 Provide care for specific groups including pregnant women, newborns and infants, adolescents and the elderly.	Understands different Metabolic and Functional Age Related Differences	Understands different Pathological Conditions Prevalent in Certain Population Groups	Understands Common System-Related Health Conditions in Relations to Age Groups	Understands Health Plans and Health Care System Requirements for Pregnant Women & Children	Provide Health care for Newborns and the Elderly.

Further Reading on CBME

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3. **Bloom, Engelhart, Furst, Hill & krathwohl (1956),** Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook I: Cognitive Domain, Publisher: Longans, Green and Co LTD
4. **Boucher et al (2017),** Competency Based Medical Education in Canada by Association of Faculties of Medicine of Canada AFMC. Accessed at: http://files.constantcontact.com/db2638dd201/0eb4f33c-5d4d-4f51-9836-04f6ec3553c2.pdf
5. **Competency Based Medical Education, Everything you wanted to know about competence by design but were afraid to ask. A guide to CBME / CBD Version 10,** MAC-CBME Postgraduate Medical Education, McMaster University, February 2017
6. **Competency-To-Curriculum Toolkit (2008),** Association for prevention teaching and Research (APTR)| Columbia School of Nursing Center for Health Policy, Accessed at: http://www.phf.org/resourcestools/Documents/Competency_to_Curriculum_Toolkit08.pdf
7. **Frank et al (2010),** Competency Based Medical Education: Theory to Practice. Medical Teacher, 2010;32(8):638-645
8. **Frank JR et al (2010):** Competency-based Medical Education: theory to Practice, Med Teacher, 2010;32(8):638-645
9. **Glossary of Medical Education Terms. Eurasian Center for Accreditation and Quality Assurance in Higher Education and Health Care (2017):** Accessed at: http://www.ecaqa.org/en/accreditation/national-register-of-accredited-educational-programmes-4
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13. **Kennedy et al (2006):** Learning Outcomes and Competences, in Bologna Handbook - "Making Bologna Work" (2006), Accessed at: https://donstu.ru/en/Tuning%20Center/Learning%20Outcomes%20and%20Competences.pdf
14. **Krathwohl (2002):** A revision of Bloom's Taxonomy: An Overview, Theory into practice, 2002;41(4):212-218
15. **Lomis et al (2017):** Competency milestones for medical students: Design, implementation and analysis at one medical school, Medical Teacher,2017;39:494-504, Published online: 10 Mar 2017 Accessed at: https://doi.org/10.1080/0142159X.2017.1299924
16. **National competency standards for the registered nurse, Nursing and midwifery board of Australia (2006),** accessed at: www.nursingmidwiferyboar.gov.au
17. **Outcomes and Standards for Undergraduate Medical Education in Singapore, Recommendations of the National Medical Undergraduate Curriculum Committee (2014):** Accessed at: https://www.moh.gov.sg/content/dam/moh_web/HPP/Main/all_professions_cpgs/NMUCC_Report_singlepage.pdf
18. **Sullivan (1995):** The Competency-Based Approach to Training. Strategy Paper No 1. JHPIEGO Corporation: Baltimore, Maryland
19. **University of Toronto MD Program - Competencies and Milestones,** Accessed at: http://www.md.utoronto.ca/sites/default/files/MD%20Program%20competencies%20-%20milestones.pdf
20. **Wright State University Educational Milestones.** Accessed at: https://medicine.wright.edu/student-life/curriculum/educational-milestones

THANK YOU