



Program Specifications for Master Degree in Infection Control

Program type: General

Department offering the program: Department of *Medical Microbiology and Immunology*

Program code: IPC 800

Total credit points: 144

Academic year: 2016 / 2017

Program Coordinators: Prof. Abdel Fattah Mohamed Attia and Prof. Amaal Balbaa

External evaluators: *Prof Mona Matta* Micobiology & Immunology Department,
Banha University

I. Aim of Program

1. Provide and develop student knowledge with fundamentals of microbiology and immunology, which will then enable the student to understand the role and responsibilities of the infection preventionists.
2. Enable graduates, as new infection preventionists, to formulate a management and implementation strategy to prevent spread of infection in the healthcare facilities as well as in the community, based on professional and practice standards.
3. Provide graduates with the opportunity to conduct an independent research project.

II. Intended learning outcomes of program (ILOs)

A. **Knowledge and understanding:** By the end of the program the candidate should be able to:

- 1) achieve sufficient understanding of medical microbiology and immunology to offer basic advice on relevant lab investigations, infection prevention and control (IPC) procedures and interpretation of results
- 2) achieve advanced understanding of the microbiological testing process
- 3) achieve advanced understanding of the mechanisms of a variety of antimicrobial agents and use in treatment of infections
- 4) achieve advanced understanding of key concepts and principles related to public health
- 5) achieve sufficient understanding of the science of epidemiology and of epidemiological techniques
- 6) describe infection risk factors (in healthcare settings & the community) that make an individual susceptible to infection/ disease
- 7) convey conceptual awareness of high-risk infectious disease worldwide, and of surveillance and control measures
- 8) understand the evidence base behind standard operating procedures (SOPs), IPC guidelines and the importance of audit and quality assurance to establish validity

- 9) outline the principles of diagnosis and management of clinical syndromes such as respiratory tract infections..etc
- 10) express a basic understanding of quality assurance in the accreditation process
- 11) describe mechanisms of microbial pathogenesis including the chain and outcomes of infections
- 12) describe how is the pathogen could be eliminated; in the environment, from medical equipment and devices and for providing healthcare
- 13) achieve advanced understanding of qualitative and quantitative research methods
- 14) achieve advanced understanding of how to conduct original research, including relevant legal and ethical issues

B. Intellectual skills: By the end of the program the candidate should be able to:

- 1) critically analyze the relationships between humans and microorganisms
- 2) critically appraise methods suggested for overcoming microbial resistance to host defense mechanisms
- 3) demonstrate important mechanisms of microbial pathogenesis and critically analyze the short and long-term effects of communicable diseases
- 4) critically explain IPC measures simply and effectively to both healthcare workers and patients
- 5) utilize guidelines of infection/disease prevention and control
- 6) compare and contrast the common symptoms of infectious diseases
- 7) analyze problems associated with infection effectively
- 8) produce accurate letters/reports and other written correspondence with clear conclusions
- 9) appreciate the importance of timely dictation and the growing use of electronic communication
- 10) Plan an independent research proposal to a high professional and ethical standard
- 11) Plan, undertake and report an independent research project
- 12) Write well-structured and clear essays

C. Professional and practical skills: By the end of the program the candidates should be able to:

- 1) perform microbiological tests to identify a variety of pathogenic organisms
- 2) make a thorough assessment of infection prevention needs in hospital and community
- 3) create an infection prevention strategy for hospital and community areas
- 4) perform an infection prevention risk assessment (IPRA) within a clinical unit/department
- 5) raise awareness of the problems associated with infection in the hospital and in the community and enable respective individuals to deal with them safely
- 6) develop a strategy for dealing with a food-related outbreak and other outbreaks of infectious disease
- 7) plan and execute laboratory experiments with an awareness of good laboratory practice assessment

- 8) establish an evidence-based set of “best practices” of IPC measures in the hospital settings
 - 9) prepare standard operating procedures
 - 10) prepare infection prevention reports
 - 11) adhere to relevant precautions and safety procedures in various healthcare settings
 - 12) use the scientific literature effectively
 - 13) use computational tools and packages
 - 14) develop an understanding of the biological characteristics of pathogenic microorganisms, the course of their infections, the functions of the immune system and the actions of antibiotics against these pathogens
 - 15) produce a research proposal to a professional standard, and submit an application to the ethics committee
 - 16) carry out health research to a high professional standard
 - 17) plan and present work in an appropriate manner
- D. **General and transferable skills: By the end of the program the candidates should be able to:**
- 1) communicate effectively via oral presentations, computer processing and presentations, and written reports
 - 2) integrate and evaluate information from a variety of sources: Use word processing packages; Use spreadsheets and statistics packages; Use presentation packages; Use data analysis software
 - 3) transfer techniques and solutions from one discipline to another: read and interpret tables of data and statistics; use statistics to analyze data; Use packages for handling and analyzing data
 - 4) choose the appropriate method of enquiry in order to address a range of practical and theoretical problems
 - 5) work with others within their own clinical team to agree and work towards goals; work successfully with other disciplines; practice reflectively and facilitate this in others
 - 6) Learn from feedback and respond appropriately and effectively to supervision and guidance; Work pragmatically to meet deadlines; Critically evaluate own performance

III. Academic standards

External References for Standards:

- a. Oxford Brookes University School of Health and Social Care: MSc, PGDip, PGCert Infection Prevention and Control School of Health and Social Care Oxford Brookes University, Jack Straw’s Lane, Marston, Oxford, OX3 0FL, UK.
www.brookes.ac.uk/international/courses/postgraduate/apply
- b. University of the High Lands and Islands (UHI). MSc Infection Control. UHI’s website on www.uhi.ac.uk/policies.
- c. University of Essex, Wivenhoe Park, Colchester CO4 3SQ, United Kingdom. School of Health and Human Sciences. Postgraduate MSc Infection Control
- d. Certification Board of Infection Control and Epidemiology (CBIC). Certification Board of Infection Control and Epidemiology, Inc. (CBIC), 555 E. Wells St., Suite 1100, Milwaukee, WI 53202: Web site: www.cbic.org

- e. Association for Professionals in Infection Control and Epidemiology, Inc. (APIC) 1275 K St., NW, Suite 1000, Washington, DC. Washington, DC, apicinfo@apic.org

IV. Program Admission Requirements

According to the bylaws of the Faculty of Medicine - Cairo University for Post Graduate Programs (July 2009), applicants should have MBBch or equivalent degree. According to Cairo University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects; Medical statistics I – English language (TOEFL or equivalent degree) – Computer skills (ICDL). Admission to the program is open during July. Selection criteria will be established by the Council of the Medical Microbiology and Immunology Department including the minimum score of the Bachelor Degree.

Also, physicians with a post-graduate degree (Master or Doctorate) after MBBch or equivalent degree are eligible to apply for this Infection Control Master. Selection criteria will be established by the Council of the Medical Microbiology and Immunology Department provided that candidates should be exempted from equivalent course(s) they have already passed.

V. Program Structure and Contents

Program duration: Three academic years.

Program structure: Total Credit points 144

- **First part: 1.5 years - Total credit points 54 - (Table 1)**
 - Compulsory courses; one academic year (30 weeks)
 - Basic Medical Microbiology & Immunology 1.5 credit points
 - Basic Clinical Microbiology & Immunology 1 credit point
 - Principles of Med Parasitology & Entomology 1 credit point
 - Principles of public health, epidemiology, Med biostatistics & surveillance 1.5 credit points
 - Employee/Occupational Health 1 credit point
 - Infection risks associated with adult medical healthcare 1 credit point
 - Infection risks associated with pediatric healthcare 1 credit point
 - Infection risks associated with surgical healthcare 1 credit point
 - Infection risks associated with emergency & intensive healthcare 1 credit point
 - Elective courses 1 credit point
 - Scientific activities 3 credit points
 - Practical training program Part 1 for 18 months 40 credit points
(10 months in Medical Microbiology & Immunology + 2 months elective courses + 6 months in other departments)

- **Second part: 1.5 years - Total credit points 65 - (Table 2)**
 - Compulsory courses; one academic year (30 weeks)
 - Applied Microbiology & Immunology 4 credit points
 - Decontamination in Infection Prevention 1 credit point
 - Identification of Infectious Disease Processes 2 credit points
 - Preventing/Controlling the Transmission of Infectious Agents 2 credit points
 - Applied and Upgraded Prevention and Control of infection 7 credit points
 - Scientific activities 4 credit points
 - Practical training program Part 2 45 credit points
- **Master Thesis:** completed during second part 25 credit points

Table 1: First part

Courses		Credit Points		ILOs
Code	Title	CPs	Total	
COMPULSORY COURSES				
<i>IPC 806 BMI</i>	Basic Medical Microbiology & Immunology	1.5	1.5	A1, A3 C1
<i>IPC 822</i>	Basic Clinical Microbiology & Immunology	1	1	
<i>IPC 805</i>	Principles of Medical Parasitology & Entomology	1	1	
<i>IPC 809</i>	Principles of public health, epidemiology, Med biostatistics & surveillance	1.5	1.5	A4, A5, C13
<i>IPC 821</i>	Employee/Occupational Health	1	1	A6, B4, C8, C11
<i>IPC 811T</i>	Infection risks associated with medical therapeutic and diagnostic procedures and devices in adults	1	1	A6, A9, A11 B6 C8, C12
<i>IPC 813 GP</i>	Infection risks associated with therapeutic and diagnostic procedures and devices in the pediatrics including neonates	1	1	
<i>IPC812 T</i>	Infection risks associated with surgical procedures including operating room, organ transplantation, implants...etc	1	1	
<i>IPC 826 T</i>	Infection risks associated with specific direct and indirect care settings in ICUs & Emergency Room	1	1	
ELECTIVE COURSES (MEDC) choose ONE course				
<i>IPC 803 MB & G</i>	Molecular Biology and Basic genetics	1	1	A1, C6, C7
<i>IPC 810 MEM</i>	Medical Ethics & Malpractice	1	1	A14, B10
SCIENTIFIC ACTIVITIES				
<i>1st Part</i>	Scientific activities	3	3	D6
PRACTICAL TRAINING PROGRAM (Basic training)				
<i>IPC 806 P1</i>	Practical training program part 1	25	40	A1 C1, C4, C7, C10, C13
	Work Based Learning In Infection Prevention & Control part 1: Public Health & Community Medicine - Occupational Medicine.) - Internal Medicine – Pediatrics – Surgery – Intensive Care Medicine - Medical Parasitology & Entomology	15		B9-12 C2-6, C8-9, C11-12,C14 C16,17

Table 2: Second part

Courses		Credit Points		ILOs
Code	Title	CPs	Total	
COMPULSORY COURSES				
<i>IPC 806 AMI</i>	Applied Microbiology & Immunology	4		A1, A3, A3, A10, A11 B1-3 C2,3,5,6,8,10-12, 14,17 D1,3-6
<i>IPC 806 DS</i>	Decontamination in Infection Prevention	1		A12, C3, C8, C9
<i>IPC 806 ID</i>	Identification of Infectious Disease Processes	2		A6,A11 C6
<i>IPC 806 IA</i>	Preventing/Controlling the Transmission of Infectious Agents	2		A3, A6, A7, A11
<i>IPC 806 AIP</i>	Applied and Upgraded Prevention and Control of infection	7		A3-A9, A11, A12 B4,5,7,8,11 C2,3,5,6,8,10-12, 14,17 D1-6
SCIENTIFIC ACTIVITIES				
<i>2nd Part</i>	Scientific activities	4	4	D6
PRACTICAL TRAINING PROGRAM				
<i>IPC 806 P2</i>	Practical training program Part 2	35	45	A2, A11 C1,7,9,13 D4
	Work Based Learning In Infection Prevention & Control part 2	10		A1,3,4,7, 8, 10,11 D4,5
Dissertation				
	Master thesis (M.Sc. IPC)	25	25	A13-14 B9-12 C15-17 D4-6

Practical Training Program

According to the Faculty of Medicine, Cairo University Bylaws for Post Graduate Programs (July 2009), all the students should have a basic training for 18 months. They should spend 10 months in Medical Microbiology & Immunology + 2 months elective courses + 6 months prevention & control of infection practices in hospitals. The second part of the practical training program will be conducted at the department of Medical Microbiology and Immunology and hospitals. The details of the training program are found in a separate document. The student may spend part of the training at one of the hospitals assigned by the Medical Microbiology and Immunology Department or the Faculty of Medicine. The student may be given assignment as work based learning in infection prevention & control conducted at his/her work location.

Master Thesis

All master-degree students should prepare thesis in Infection Prevention and Control. The department and the ethical committees must approve the protocol of the research. The thesis (should / may) include a review part and a research part. The thesis is supervised by one or more senior staff members and may include other specialties according to the nature of the research. The thesis should be evaluated and approved by a committee of three professors including one of the supervisors and an external professor.

Scientific Activities:

The students should participate in the scientific activities of the departments such as:

- *Journal club (presenting scientific articles) once every 2 weeks.*
- *Seminars (including recent topics and controversial issues). Students are expected to participate in the discussions.*
- *Scientific meetings arranged by the department.*
- *Others e.g., conferences, etc*

Each activity is monitored and given credit points registered in the candidate logbook. The student should collect the required points before allowed to sit for final exam.

VI. Regulations for Progression and Program Completion

After finishing the first part, attending the specified courses and collecting the required credit points, the student should pass the first part examination before proceeding to the second part. In case the student fails to pass the examination, he may proceed in the practical training and can resubmit for the next first part examination. After passing the first part, the student submits a protocol for master thesis at the beginning of second part. Before submitting to the final exam, he should finish the thesis and get approval, complete phase 2 of practical training program, and collect the required credit points. The candidate will receive his degree after passing this final examination. Master degree should be obtained within a maximum of 6 years after registration date.

VII. Assessment

A: Assessment Tools

- **Supervision and Monitoring of Training Program**

According to the Faculty of Medicine, Cairo University Bylaws for Residency Training Programs, coordinators carry continuous assessment during the program. A residency training logbook including scientific activities will be kept for each student to document all his/her clinical, laboratory and/or operative activities as well as his/her participation in different scientific activities. The head of the department should allow the students to undergo the final examination when they complete their training program and collect the credit points needed.

- **Formal Assessment**

According to the Faculty of Medicine, Cairo University Bylaws for Post Graduate Programs (July 2009). Students should be assessed at the end of first part and of the second part.

1. First Part Final Exam:

- **Basic Medical Microbiology & Immunology:** One-hour written exam (including short essay and multiple choice questions) + practical exam by Med Microbiology & Immunology Dept.

- **Basic Clinical Microbiology & Immunology:** One-hour written exam (including short essay and multiple choice questions) by Clinical & Chemical Pathology Dept.
- **Employee/Occupational Health:** One-hour written exam (including short essay and multiple choice questions) by Environmental & Occupational Medicine Dept.
- **Principles of public health, epidemiology, med biostatistics & surveillance:** One hour written exam (including short essay and multiple choice questions) + oral exam by Public Health & Community Medicine Dept.
- **Principles of Medical Parasitology & Entomology:** One hour written exam by Medical Parasitology Dept.
- **Risks of infections:** One-hour written exam for each of the Internal Medicine Dept, Pediatric Dept, Surgery Dept and Intensive care Medicine Dept (4 hours total)
- **Elective courses:** One hour written exam

2. Second Part Final Exam Part 2:

- **Applied Microbiology & Immunology and Decontamination in Infection Prevention:** Three-hour written exam (including short essay, multiple choice questions and cases scenario); Oral exam and Practical exam by Med Microbiology & Immunology Dept.
- **Identification of Infectious Disease Processes + Preventing/Controlling the Transmission of Infectious Agents:** Three-hour written exam (including short essay, multiple choice questions and cases scenario); Oral exam and Practical exam by Med Microbiology & Immunology Dept.
- **Applied and Upgraded Prevention and Control of infection:** Three-hour written exam (including short essay, multiple choice questions and cases scenario); Oral exam and Practical exam by Med Microbiology & Immunology Dept.

B: Assessment Schedule:

1. First Part Final Exam:

The written exam will be held in April/October (four days):

Day one: Basic Medical Microbiology & Immunology (1hour) + Basic Clinical Microbiology & Immunology (1hour) + Employee/Occupational Health (1hour)

Day two: Principles of public health, epidemiology, med biostatistics & surveillance (1hour) + Elective course (1hour) + Principles of Medical Parasitology & Entomology (1hour)

Day three: Internal Medicine (1hour) + Pediatrics (1hour)

Day four: Surgery (1hour) + Intensive care (1hour)

This will be followed by the practical and oral exams on separate days.

2. Second Part Final Exam:

The written exam will be held in May/ November (three days):

Day one: Applied Microbiology & Immunology (2 hours) + Decontamination in Infection Prevention (1 hour)

Day two: Identification of Infectious Disease Processes + Preventing/Controlling the Transmission of Infectious Agents (2 hours)

Day three: Applied and Upgraded Prevention and Control of infection (3 hours)

This will be followed by practical exam, and oral exams on separate days.

C: Weighing of Assessment (Marks allocated to courses): (50 marks for each credit point)

Courses		Marks			
Code	Title	Written	Oral	Practical	Total
FIRST PART					
IPC 806 BMI	Basic Medical Microbiology & Immunology	50	--	25	75
IPC 822	Basic Clinical Microbiology & Immunology	50	--	--	50
IPC 805	Principles of Med Parasitology & Entomology	25	--	25	50
IPC 809	Principles of public health, epidemiology, Med biostatistics & surveillance	50	25	--	75
IPC 821	Employee/Occupational Health	50	--	--	50
IPC 811T	Infection risks associated with medical procedures in adults	50	--	--	50
IPC 813 GP	Infection risks associated with pediatric procedures including neonates	50	--	--	50
IPC812 T	Infection risks associated with surgical procedures	50	--	--	50
IPC 826 T	Infection risks associated with ICUs & Emergency Room	50	--	--	50
IPC 804	Basic genetics and Molecular Biology	50	--	--	50
Medics	Medical ethics and medico-legal medicine & research ethics	50			
Total First Part					550
SECOND PART					
- IPC 806 AMI - IPC 806 DS	- Applied Microbiology & Immunology - Decontamination in Infection Prevention	- 120 - 30	- 20 - 10	- 60 - 10	250
- IPC 806 ID - IPC 806 IA	- Identification of Infectious Disease Processes - Preventing/Controlling the Transmission of Infectious Agents	- 50 - 50	- 25 - 25	- 25 - 25	200
- IPC 806 AIP	- Applied and Upgraded Prevention and Control of infection	- 150	- 50	- 150	350
					800

**To pass the written exam the student should attain sixty percent of the total written marks as a minimum*

Remarks

- It is mandatory to pass all the papers of written exams separately.
- The passing mark in any written exam is $\geq 60\%$.

VIII. Evaluation of Program Intended Learning Outcomes

Evaluator	Tool	Sample
1. Senior Students	Questionnaire at the end of the program	All the PG students
2. Alumni	The faculty is currently developing an Alumni office for postgraduates	Not yet determined
3. Stakeholders	A meeting will be arranged during annual conference of the department	Available representatives from: <ul style="list-style-type: none"> - Army hospitals - National medical insurance - Medical syndicate - Ministry of health
4. External Evaluators	Review program and courses Attending the final exam	Once before implementation Bi-annual report
5. College Quality Assurance committee	Annual program reviewer	

Date of Approval by Department: Nov 2010

Program Coordinator: Prof. Abdel Fattah Mohamed Attia

Assistant Coordinator: Prof. Amaal Balbaa

Head of Department: Prof. Nadia Hafez Ouda