



Program SPECIFICATION FOR Master Degree in Parasitology

Code: 1707700

University: Alexandria

Faculty: Medical Research Institute

Program Specification

A- Basic information

1- Program title : Master of Science in Applied and Molecular Parasitology

2- Program type: single double multiple

3- Department(s) : Parasitology Department

4- Coordinator : Prof. Dr : Hend El-Taweel

5- External evaluator(s): Prof Dr: Sherif Abaza: prof. of Parasitology, Faculty of Medicine, Suez canal University

6- Last date of program specification approval: 8/1/2017

B- Professional Information

1- Program aims:

Provide students with information and practical training to be able to pursue a career as competent parasitologist demonstrating adequate awareness and professional skills to recognize, and manage many parasitological diseases

-Equip the students with specialized knowledge and skills to be able to design, carry out and contribute significantly to research in the field of parasitology.

By the end of the program the students should

1-Demonstrate basic knowledge on biology and transmission of major species of helminthes, protozoa and arthropods of medical importance.

2-Describe and use basic techniques in parasitology.

3-Understand the basic knowledge of molecular parasitology and identify its role in the diagnosis of different parasitological diseases

4- Conduct different immunological techniques to identify parasitic infections.

5-Understand the basic concepts of Immunology in parasitic disorders and discuss the disordered function of the immune system in these diseases.



- 6- Interpret and analyze the results of epidemiological studies of parasitic diseases and propose measures for control and or elimination of some parasitic infections.
- 7- Investigate various aspects of parasitic diseases by using appropriate models of experimental animals.
- 8- Integrate knowledge base in medical parasitology to interpret different parasitic disorder, solve problems and critically analyze data related to these disorders.
- 9- Develop adequate professional skills to be able examine clinical or environmental samples for parasites and to identify the detected parasites.
- 10- Understand the ethical responsibility in the field of biomedical research and professional practice.
- 11- Apply advanced technological methods to solve parasitic diseases related problems in accordance with local and national priorities and develop continuous learning attitudes.
13. Develop skills in information technology, problem solving, scientific research, and team working.
14. Prepare and present literature review of different parasitological conditions.
15. Show competence in communicating with others to discuss parasitological problems and findings.

2- Intended learning outcomes (ILOS)

a- knowledge and understanding:

- a1. Review structural features and life cycle of helminthic parasites and explain main features of diseases caused by these parasites and principle measures of control.
- a2. Recall biology and life cycle of protozoan and arthropod parasites and discuss their medical importance, detection and prevention.
- a3. Understand the general considerations for specimen collection and preservation prior to parasitological examinations and discuss different direct diagnostic techniques used for detection of parasitic infections.
- a4. Describe basis of immunological methods used in diagnosis of parasitic infections and discuss their applications, advantages and limitations for selected parasites.
- a5. Explain important information regarding the principles of immune regulation in response to parasitic infections.
- a6. Understand various methods of epidemiologic investigations applicable to parasitic diseases and review the distribution and determinants of parasitic diseases in different localities.
- a7. Discuss morbidity caused by parasitic infections and their pathological and clinical impact on different body systems.



- a8. Review aspects of interaction between parasitic infections and other infections and medical conditions.
- a9. Provide knowledge on types and mechanism of action of anti-parasitic chemotherapy and its use in the treatment of parasitic diseases and transmission control or elimination.
- a10. Understand the role of snails in transmission of human parasites and recall important information on taxonomy, ecology and rearing of medically important snails.
- a11. Recognize the concept of ethics and discuss the principle ethical considerations in different types of biomedical research.
- a12. Understand basic concepts for protein analysis, gene function and, PCR and recall the applications of molecular biology in the field of parasitology.

b- Intellectual skills:

- b1. Distinguish morphological features of helminthic parasites and appraise different factors affecting their life cycle pattern and select suitable methods for detection of helminthic infections in man.
- b2. Differentiate protozoan and arthropod parasites of medical importance, illustrate their life cycle and select suitable methods for diagnosis of protozoal diseases.
- b3. Compare the utility of direct techniques used in diagnosis of parasitic infections evaluate results.
- b4. Select suitable serological techniques in different situations, interpret the results and relate them to other findings.
- b5. Illustrate the diversity in immunological response to different protozoan and helminth parasites and demonstrate the interaction of parasites with the human system and its impact on disease outcome.
- b6. Analyze factors causing perpetuation of parasitic infections at individual and community level and select appropriate methods for evaluation of parasitic diseases spread or elimination.
- b7. Differentiate symptoms and signs of parasitic diseases from those caused by non-parasitic causes, appraise prognosis and analyze the contribution of parasitic infections to the burden of tropical diseases in terms of morbidity and mortality.
- b8. Integrate clinical findings and scientific information and construct schemes to solve problems related to parasitic diseases including those associated with other medical conditions.
- b9. Select suitable anti-parasitic chemotherapy based on mechanism of action, efficacy and drug-drug interactions, calculate dosage and analyze patients response to therapy
- b10. Design protocols for laboratory infection of potential snail vectors with parasites and illustrate the role of snail control in prevention or eradication of parasitic infections.
- b11. Evaluate important ethical guidelines in research involving man or experimental animals



- b12. Illustrate applications of different molecular techniques in parasitology including diagnosis of light infections, antigen preparations, species identification and control of parasitic infections.

c- professional and practical skills:

- c1. Perform microscopic examination of different clinical and environmental samples for detection and identification of parasites and write reports..
- c2. Apply proper procedures for collection ,preservation and transportation of clinical samples submitted for parasitological examination.
- c3. Apply basic techniques used in parasitology labs, including direct smears, temporary and permanent staining, concentration and quantitative techniques on clinical samples (simple sedimentation -formol ether- kato katz- floatation -blood films – filtration)
- c4. Use different equipments in parasitological laboratory including ELISA reader and thermal cycler, electrophoresis apparatus.
- c5. Apply DNA extraction methods and use PCR (conventional) in diagnosis and investigation of parasitic diseases.
- c 6. Implement basic quality control measures in parasitology labs.
- c7. Develop practical skills in essential immunological techniques (Indirect haemagglutinatiin-ELISA- Immunochromatography)
- c8. Perform proper clinical examination of patients with suspected parasitic diseases and determine disease stage and complications.
- c9. Design epidemiological studies to investigate prevalence and risk factors for parasitic diseases and participate in implementation of control programs to combat parasites.
- c10. Collect and examine snails for trematode infection and use snails in research investigating snail transmitted parasites.

d- General and transferable skills:

- d1- Gain skills in organizing seminars with oral and written presentations and group discussion.
- d2- Practice to use the internet and different periodicals to prepare a scientific topic
- d3- Work as part of a team
- d4-Integrate quality control standards in the laboratory
- d5- Develop skills in communications
- d6- Use the computer in statistical analysis.



3- Academic standards

3a External references for standards (Benchmarks)

Generic Academic Reference Standards of the National Authority for Quality Assurance and Accreditation of Education (NAQAAE).

Date of Academic Reference standards (ARS) approval by Institute Council: 12/2/2014

3b Comparison of provision to selected external references:

| Generic Academic Standards | ARS of Master of Parasitology |
|--|---|
| <p>A1- Basic facts , theories, of the specialty and related subjects/ fields</p> | <p>a1- Review main morphological features, life cycle stages and modes of transmission of helminths, protozoa and arthropods of medical importance.</p> <p>a2- Discuss immunological and clinical aspects of parasitic infections and various methods of treatment, control and elimination.</p> <p>a3- Recognize the general considerations for specimen collection and methods of sample preparation and examinations for detection of parasitic infections.</p> <p>a4- Understand various methods of epidemiologic investigations applicable to parasitic diseases, and review the distribution and determinants of parasitic diseases in different localities.</p> <p>a5- Describe basis and applications of different immunological and molecular methods used in the field of parasitology.</p> <p>a6- Understand the adequate principles for dealing with snails in conducting parasitology research and recognize their role in transmission of human parasites.</p> <p>a7- Recognize the concept of ethics in different types of biomedical research.</p> |
| <p>A2- Mutual relation between professional practice and effects on environment</p> | <p>a4- Understand various methods of epidemiologic investigations applicable to parasitic diseases, and review the distribution and determinants of parasitic diseases in different localities</p> |
| <p>A3- Main scientific advances in the field of practice</p> | <p>a2- Discuss immunological and clinical aspects of parasitic infections and various methods of treatment, control and elimination.</p> <p>a5- Describe basis and applications of different immunological and molecular methods used in the field of parasitology.</p> |



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| <p>A4-Fundamentals of ethical & legal practice</p> | <p>a7- Recognize the concept of ethics in different types of biomedical research.</p> |
| <p>A5 -Quality standards of the practice</p> | <p>a3 -Recognize the general considerations for specimen collection and methods of sample preparation and examinations for detection of parasitic infections.</p> <p>a5-Describe basis and applications of different immunological and molecular methods used in the field of parasitology.</p> |
| <p>A6- Basics and ethics of scientific research</p> | <p>a6- Understand the adequate principles for dealing with snails in conducting parasitology research and recognize their role in transmission of human parasites</p> <p>a7- Recognize the concept of ethics in different types of parasitological research.</p> |
| <p>B1 -Interpret, analyze & evaluate the information to solve problems</p> | <p>b1-Distinguish morphological features and life cycle stages of different parasites and categorize parasites according to their modes of transmission and illustrate the diversity in human immune response to parasites.</p> <p>b2-Select suitable parasitological, immunological and molecular methods for detection of parasitic infections, compare the utility of different techniques and evaluate results.</p> <p>b4- Differentiate symptoms and signs of parasitic diseases and select suitable anti-parasitic chemotherapy based on mechanism of action, efficacy and drug-drug interactions, calculate dosage and analyze patients response to therapy.</p> <p>b5- Analyze factors causing perpetuation of parasitic infections at individual and community level, Integrate findings and scientific information and construct schemes to solve problems related to parasitic diseases, interpret common graphs and confidence interval and select the appropriate test to compare between groups.</p> |
| <p>B2- Solve some problems that do not conform to classic data (incomplete data)</p> | <p>b4- Differentiate symptoms and signs of parasitic diseases and select suitable anti-parasitic chemotherapy based on mechanism of action, efficacy and drug-drug interactions, calculate dosage and analyze patients response to therapy.</p> |
| <p>B3- Integrate different information to solve professional problems</p> | <p>b2-Select suitable parasitological, immunological and molecular methods for detection of parasitic infections, compare the utility of different techniques and evaluate results.</p> <p>b4- Differentiate symptoms and signs of parasitic diseases and select suitable anti-parasitic chemotherapy based on mechanism of action, efficacy and drug-drug interactions, calculate dosage and analyze patients response to therapy.</p> |
| <p>B4- Conduct a scientific research &/Or write scientific systematic approach to a research problem (hypothesis)</p> | <p>b7-Design protocols for laboratory infection of experimental animals and snail vectors with parasites and illustrate the role of snail control in prevention or eradication of parasitic infections.</p> |
| <p>B5- Evaluate risks imposed during</p> | <p>b4- Select suitable anti-parasitic chemotherapy based on</p> |



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| <p>professional practice.</p> | <p>mechanism of action, efficacy and drug-drug interactions, calculate dosage and analyze patients response to therapy.</p> <p>b7-Design protocols for laboratory infection of experimental animals and snail vectors with parasites and illustrate the role of snail control in prevention or eradication of parasitic infections.</p> |
| <p>B6- Plan for professional improvement</p> | <p>b2-Select suitable parasitological, immunological and molecular methods for detection of parasitic infections, compare the utility of different techniques and evaluate results.</p> <p>b3- Illustrate applications of different molecular techniques in parasitology.</p> |
| <p>B7- Take professional decisions in wide range of professional situations</p> | <p>b4- Differentiate symptoms and signs of parasitic diseases and select suitable anti-parasitic chemotherapy based on mechanism of action, efficacy and drug-drug interactions, calculate dosage and analyze patients response to therapy.</p> <p>b5- Analyze factors causing perpetuation of parasitic infections at individual and community level, Integrate findings and scientific information and construct schemes to solve problems related to parasitic diseases, interpret common graphs and confidence interval and select the appropriate test to compare between groups.</p> |
| <p>C1- Competent in all basic and some of the advanced professional skills (to be determined according to the specialty board/ department)</p> | <p>c1- Apply proper procedures for collection of stool, blood, urine, CSF as well as environmental samples and use different techniques in parasitology labs, including direct smears, staining, concentration and quantitative methods for detection and identification of parasites.</p> <p>c2- Develop essential practical skills o be able to apply different types of molecular techniques and immunological methods for diagnosis and investigation of parasitic diseases.</p> <p>c3- Implement basic quality control measures in parasitology labs .</p> <p>c4- Perform proper clinical examination of patients with suspected parasitic diseases and determine disease stage and complications.</p> <p>c5- Design and conduct studies to investigate prevalence and risk factors for parasitic diseases, to determine trematode infection of snails , and to use experimental animals and snails in research involving parasites and use the suitable statistical measure or test through statistical software to present and interpret data.</p> |
| <p>C2- Write and appraise reports</p> | <p>c1 Apply proper procedures for collection of stool, blood, urine, CSF as well as environmental samples and use different techniques in parasitology labs, including direct smears, staining, concentration and quantitative methods for detection and identification of parasites.</p> <p>c2- Develop essential practical skills o be able to apply</p> |



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| | <p>different types of molecular techniques and immunological methods for diagnosis and investigation of parasitic diseases.</p> <p>c4- Perform proper clinical examination of patients with suspected parasitic diseases and determine disease stage and complications.</p> <p>c5- Design and conduct studies to investigate prevalence and risk factors for parasitic diseases, to determine trematode infection of snails , and to use experimental animals and snails in research involving parasites and use the suitable statistical measure or test through statistical software to present and interpret data.</p> |
| C3- Evaluate methods and tools used in specialty | <p>c1- Apply proper procedures for collection of stool, blood, urine, CSF as well as environmental samples and use different techniques in parasitology labs, including direct smears, staining, concentration and quantitative methods for detection and identification of parasites.</p> <p>c2- Develop essential practical skills o be able to apply different types of molecular techniques and immunological methods for diagnosis and investigation of parasitic diseases.</p> <p>c5- Design and conduct studies to investigate prevalence and risk factors for parasitic diseases, to determine trematode infection of snails , and to use experimental animals and snails in research involving parasites and use the suitable statistical measure or test through statistical software to present and interpret data.</p> |
| D1- Communicate effectively using all methods | d5- Develop skills in communications. |
| D2- Use information technology to improve his/her professional practice | <p>d2- Practice to use the internet and different periodicals to prepare a scientific topic.</p> <p>d6- Use the computer in statistical analysis.</p> |
| D3- Practice self appraisal and determines his learning needs | d1- Gain skills in organizing seminars with oral and written presentations and group discussion. |
| D4- Share in determination of standards for evaluation of others (e.g.: subordinates/ trainees etc.) | <p>d1-Gain skills in organizing seminars with oral and written presentations and group discussion.</p> <p>d4-Integrate quality control standards in the laboratory .</p> |
| D5- Use different sources of information to obtain data | d2- Practice to use the internet and different periodicals to prepare a scientific topic. |
| D6- Work in teams | d3- Work as part of a team. |
| D7- Manage time effectively | d1- Gain skills in organizing seminars with oral and written presentations and group discussion. |



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| D8- Work as team leader in situations comparable to his work level | d3- Work as part of a team. |
| D9- Learn independently and seek continuous learning | d2- Practice to use the internet and different periodicals to prepare a scientific topic. |

4- Curriculum structure and contents

4.a program duration: 2-5 academic years.

4.b program structure :

4.b.i- No. of hours per week in each year/semester:

| Semester | Core Courses | Elective Courses |
|-----------------|--------------|------------------|
| | No. of hours | No. of hours |
| First semester | 8 | 2 |
| Second semester | 6 | 2 |
| Third semester | 6 | |
| Fourth semester | 4 | 2 |

4.b.ii- No. of credit hours Lectures Practical Total

 Compulsory Elective Optional

4.b.iii- No. of credit hours of basic science courses No. %

4.b.iv- No. of credit hours of courses of social sciences and humanities. No. %

4.b.v- No. of credit hours of specialized courses No. %

4.b.vi- No. of credit hours of other courses No. %

**4.b.vii- Field Training**

No

2

%

6.6

4.b.viii- Program levels (in credit-hours system)

Student is required to pass at least 12 credit hours with CGPA not less than C+ before submitting a thesis proposal.

5- Program Courses**5.1- Compulsory (24 credit hours)**

| Code No. | Course Title | No. of credit hours | No. of hours /week | | |
|----------|------------------------------------|---------------------|--------------------|-----------|-------|
| | | | Lecture | Practical | Field |
| 1707701 | Parasitology I | 4 | 3 | 2 | - |
| 1707702 | Parasitology II | 4 | 3 | 2 | - |
| 1707703 | Diagnostic parasitology I | 4 | 2 | 4 | - |
| 1707704 | Diagnostic parasitology II | 2 | 1 | 2 | - |
| 1707705 | Immunology of Parasitology | 2 | 2 | - | - |
| 1707706 | Epidemiology of parasitic diseases | 4 | 2 | - | 8 |
| 1707713 | Molecular parasitology | 2 | 1 | 2 | - |
| 1721720 | Medical statistics | 2 | 1 | 2 | - |

5.2- Elective I (2 credit hours)

| Code No. | Course Title | No. of credit hours | No. of hours /week | |
|----------|-----------------------------------|---------------------|--------------------|-----------|
| | | | Lecture | Practical |
| 1707707 | Clinical parasitology I | 2 | 1 | 2 |
| 1707708 | Clinical parasitology II | 1 | 1 | - |
| 1707709 | Treatment of parasitic infections | 1 | 1 | - |

5.3- Elective II (4 credit hours)

| Code No. | Course Title | No. of credit hours | No. of hours /week | |
|----------|------------------------------|---------------------|--------------------|-----------|
| | | | Lecture | Practical |
| 1707711 | Experimental parasitology II | 2 | 1 | 2 |
| 1707712 | Biomedical research ethics | 2 | 2 | - |
| 1701720 | Biochemistry | 2 | 1 | 2 |



| | | | | |
|----------------|--------------|---|----------|---|
| 1705720 | Hematology | 2 | 1 | 2 |
| 1708720 | Immunology | 2 | 1 | 2 |
| 1710720 | Pathology | 2 | 1 | 2 |
| 1706720 | Bacteriology | 2 | 1 | 2 |

5.4- Optional – (none)

6- Program admission requirements

Graduate students with a. M.B. Ch. B. of Medicine, B. Sc. of Veterinary, Pharmacy, Science, or Agriculture.

Teaching hours for the program

- In order to be granted the master degree in various fields, the student must fulfill and pass the specified number of credit hours for each degree.

The student can select a number of courses from within other optional courses at the Medical Research Institute or from other faculties within the University of Alexandria or other universities

7- Regulations for progression and program completion

For the progression and completion of the program to obtain the degree of **Master of Science in Applied and Molecular Parasitology**, the student must:

- 1- Complete **30** credit hours with CGPA of at least C+ .
- 2- Submit a thesis validity report by an examination committee approved by the department council and their members include at least two external examiners.

8- Evaluation of Students enrolled in the program.

| Tool evaluation | Intended learning outcomes being assessed |
|------------------------|--|
| Written | ILOs a &b |
| Practical | ILOs c |
| Oral | ILOs a ,b &d |
| Semester Work | ILOs b & d |

**Evaluation of the Program**

| Evaluator | Tool | Sample |
|--|-------------|-----------------------|
| 1- Senior students | Interview | At least 50 % |
| 2- Alumni | Interview | Representative sample |
| 3- Stakeholders (Employers) | Interview | Representative sample |
| 4- External Evaluator(S) or External Examiner (s) | Reports | Prof.Dr. Maha Gafaar |
| 5- Other | | |

Dates of Previous editions/revisions:

| Editions/Revisions Number | Date |
|----------------------------------|-------------|
| Edition no.1 | 2009 |
| Edition no. 2 | 2011 |
| Edition no.3 | 5/6/2014 |
| Edition no.3, revision no.1 | 12/2014 |
| Edition no.3, revision no.2 | 8/2016 |

Program coordinator :Name: **Prof. Dr : Hend El-Taweel.**

Signature :

Department Head:Name: **Prof.Dr: Mona Elsayad**

Signature:

Date of Department Council Approval: 6/9/2017



****Program Aims vs ILOs matrix***

| ILO | a 1 | a 2 | a 3 | a 4 | a 5 | a 6 | a 7 | a 8 | a 9 | a 10 | a 11 | a 12 | b 1 | b 2 | b 3 | b 4 | b 5 | b 6 | b 7 | b 8 | b 9 | b 10 | b 11 | b 12 | C 1 | C 2 | C 3 | C 4 | C 5 | C 6 | C 7 | C 8 | C 9 | C 10 | d 1 | d 2 | d 3 | d 4 | d 5 | d 6 | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|--|---|---|---|--|
| 1 | × | × | × | | | | | | | | | | × | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | × | | | | | | | | | | × | | | | | | | | | | | × | × | × | | × | | | | | | | | | | | | × | | | |
| 3 | | | | | | | | × | | | | | | | | | × | | | | | | | | | | × | | × | | | | | | | | | | | | | | × | | |
| 4 | | | | | × | × | | | | | | | | | | × | | | | | | | × | | | | | × | | × | | | | | | | | | | | | | × | | |
| 5 | | | | | | | × | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | × | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | × | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | × | | | | | | | | | | | | | | | | | | | × | | |
| 8 | | | | × | | | | | × | × | | | | × | | | | × | | | × | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | × | | | | | | | × | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | × | |



****Program ARS vs ILOs matrix***

| ARS | a 1 | a 2 | a 3 | a 4 | a 5 | a 6 | a 7 | a 8 | a 9 | a 10 | a 11 | a 12 | b 1 | b 2 | b 3 | b 4 | b 5 | b 6 | b 7 | b 8 | b 9 | b 10 | b 11 | b 12 | c 1 | c 2 | c 3 | c 4 | c 5 | c 6 | c 7 | c 8 | c 9 | c 10 | d 1 | d 2 | d 3 | d 4 | d 5 | d 6 | | | | | | | | |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--|--|--|--|--|--|--|--|
| A1 | X | X | | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A2 | | | | | X | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A3 | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A4 | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A5 | | | | X | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A6 | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A7 | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B1 | | | | | | | | | | | | | X | X | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B2 | | | | | | | | | | | | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B3 | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| B4 | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B5 | | | | | | | | | | | | | | | | X | X | | X | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B7 | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C1 | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| C2 | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | X | | | | | | | | | | | | | | | | | | |
| C3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| C4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



***Teaching methods vs Course matrix**

| | 1707701 | 1707702 | 1707703 | 1707704 | 1707705 | 1707706 | 1707707 | 1707708 | 1707709 | 1707711 | 1707712 | 1707713 | 1707720 |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Lecture | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Practical/Clinical | X | X | X | X | X | | X | X | | X | | X | X |
| Brainstorming | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Discussion Groups | X | | X | X | X | X | X | X | X | X | X | X | X |
| Problem Solving | | | | | | | X | X | | | | | |
| Case Study | | | | | | | X | X | | | | | |
| Field Training | | | | | X | X | | | | | | | |
| Role playing | | | | | | | | | | | | | |
| Training Workshops | X | X | X | | | | | | | | | X | |
| Self-Directed Learning | X | X | X | X | X | X | X | X | X | X | X | X | X |
| e-learning | | | | | | | | | | | | | |
| Project | | | | | | | | | | | | | |