**Program Name: BS MLS (Medical Laboratory Sciences)**

**PERFORMA FOR REVISION OF EXISTING PROGRAM**

**Program Scheme of Studies**

|  |  |
| --- | --- |
| **Eligibility Criteria**:(Minimum Criteria for Admission) |  50 % |
| **Duration:** (Years of study) |  4 years |
| **Semester Duration:** (Weeks) |  16-18 weeks |
| **Semesters:**  |  |
| **Course Load per Semester:**(Credit Hours)    |  15/18 |
| **Number of Courses per semester:** |  6/7 |
| **Structure of the Scheme**  |
| **Courses Credit Hours**  |  |
| **Core Courses:**(Credit Hours)   | 22 |
| **Foundation Courses:**(Credit Hours)   | 43 |
| **Major Courses:** (Credit Hours)   | 44 |
| **Technical Electives:** (Credit Hours)      |  |
| **General Electives:**(Credit Hours)    | 25 |
| **Supporting Science:** (Credit Hours)    | 5 |
| **University Electives:** (Credit Hours)   | 3(0 credit hours)) |
| **Total Credit Hours:**  | 139 |

**Program Road Map**

**Applicable to Batch No. :243 Session : fall 2022\_**

|  |
| --- |
| **(FOUR YEARS PROGRAM)****BS MEDICAL LABORATORY SCIENCES (ROAD MAP)** |
|
| **Semester 1** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.101 | Anatomy I | 4(3-1) | None |
| SHS.102 | Physiology I | 3(2-1) | None |
| SHS.114 | Biochemistry I | 3(2-1) | None |
| SHS.104 | English I | 3(3-0) | None |
| SHS.105 | Islamiyat-I | 2(2-0) | None |
| SHS.106 | Introduction to Computers-I | 3(2-1) | None |
|   |  |  |   |
|  |  | **18** |  |
| **Semester 2** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.107 | Anatomy II | 4(3-1) | SHS.101 |
| SHS.108 | Physiology II | 3(2-1) | SHS.102 |
| SHS.115 | Biochemistry II | 3(2-1) | SHS.114 |
| SHS.110 | English II | 3(3-0) | None |
| SHS.111 | Pakistan Studies  | 2(2-0) | None |
| MLS.101 | Introduction to Medical Lab Sciences | 3(2-1) |   |
|   |  | 0 |   |
|  |  | **18** |  |
| **Semester 3** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.201 | Anatomy III | 3(2-1) | SHS.107 |
| SHS.202 | Physiology III | 3(2-1) | SHS.108 |
| SHS.204 | English III | 3(3-0) | SHS.110 |
| SHS.205 | Biostatistics I | 3(3-0) | None  |
| MLS.201 | Molecular Biology | 3(2-1) | SHS.115 |
| SHS-219 | International Relations  | 2(2-0) |   |
|  |  | 0 |  |
|  |  | **17** |  |
| **Semester 4** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.208 | Behavioral Sciences | 3(3-0) | None |
| SHS.209 | Biostatistics II | 3(3-0) | SHS.205 |
| MLS.202 | General Microbiology and sterilization | 3(2-1) | MLS.201 |
| MLS.203 | Haematology I | 3(2-1) | None |
| MLS.204 | Biomedical Instrumentation | 3(2-1) | None |
| MLS.205 | Basic Clinical Chemistry | 3(2-1) | None |
|  |  | **18** |  |
|  |  |  |  |
| **Semester 5** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| MLS.301 | Haematology II | 3(2-1) | MLS.203 |
| SHS.302 | Clinical Bacteriology and Mycology | 3(2-1) | SHS.202  |
| MLS.303 | Blood Banking and Transfusion Medicine | 3(2-1) | MLS.203 |
| MLS.304 | Basic Immunology and Serology | 3(2-1) | None |
| MLS.305 | Basic Pathology and Histology | 2(2-0) | None |
| SHS.364 | Patient Safety | 1(1-0) | None |
| MLS.306 | Quality Assurance and Management | 2(2-0) | None |
| **SD.100** | English Immersion | 0 |  |
|  |  | **17** |  |
| **Semester 6** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.317 | Pathology II | 2(2-0) | MLS.305 |
| MLS.307 | Human Genetics  | 3(2-1) | SHS.206 |
| SHS.320 | Virology & Parasitology | 3(2-1) | MLS.202 |
| SHS-365 | Pharmacology | 2(2-0) |  SHS-115 |
| MLS.308 | Epidemiology and Public Health | 2(2-0) | None |
| MLS.309 | Research Methodology | 2(2-0) | SHS.209 |
| MLS.310 | Clinical Lab Practice I | 3(0-3) | MLS.205 |
| **SD.101** | 21st Century Skills | 0 |  |
|  |  | **17** |  |
| **Semester 7** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| MLS.401 | Forensic Science and Cytogenetics | 3(2-1) | MLS.308 |
| MLS.402 | Medical Biotechnology and gene manipulation | 3(2-1) | MLS.201 |
| MLS.403 | Bioinformatics | 3(2-1) | MLS.308 |
| MLS.404 | Histological & Cytological techniques | 3(3-0) | MLS.305 |
| MLS.405 | Clinical Lab Practice II | 3(0-3) | MLS.310 |
|  SHS.491 | Research Project Proposal | 1(1-0) |  MLS. 309 |
|  | Community services | 80 hrs |  |
|  |  | **16** |  |
| **Semester 8** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| MLS.406 | Advanced Clinical Chemistry  | 3(2-1) | MLS.303 |
| MLS.407 | Advanced Clinical Microbiology  | 3(2-1) | MLS.202 |
| MLS.408 | Clinical lab Establishment and Management | 3(3-0) | None |
| MLS.409 | Advanced Clinical Immunology | 3(2-1) | MLS.304 |
| MLS.410 | Research Project for Allied Health Sciences | 6(0-6) | MLS.404 |
|  |  | **18** |  |
|  |  |  |  |
|  | **Total Cr. Hours** | **139** |  |

**Details of Faculty, Enrollment and Resources**

**Estimated Enrollment, Faculty and other Resources Required for New Program**

|  |  |  |
| --- | --- | --- |
| **Year** | **Full-time Enrollment** | **Part-time Enrollment** |
| **1** | 100 |  |
| **2** | 150 |  |
| **3** | 150 |  |

|  |
| --- |
| **CURRENT FACULTY** |
| Name of Faculty | Highest Degree Earned | Total Years Teaching Experience | Years Teaching in this Institution | Area of Degree Specialty | Full-Time or Part-Time (Visiting) in Program |
| Ms Almina Shafiq | PHD Scholar\*M.Phil. | 6 years | 6 years | MLT, Immuno | Full-time |
| Ms Rabia Aslam | M.Phil. | 7 Years | 6 years | MLT,Immuno | Full-time |
| Sir Naveed Munir | PHD Scholar\*M.Phil. | 5 Years | 7 months | MLT, Biochemistry | Full-time |
| Dr Atika Hashmi  | PHD. | 14 years | 3 months | MLT,Molecuar Biology | Full-time |
| Ms Madiha Asghar | M.Phil. | 7.2 years | 3.2 years | MLT, microbiology | Full-time |
| Sir Mouvez Zeeshan | M.Phil. | 4 years | 2 year | MLT, microbiology | Full-time |
| Total Full-time Faculty in Program:Total Part-time (Visiting) Faculty in Program |

|  |
| --- |
| **REQUIRED FACULTY** |
| Number of Faculty Needed | Highest Degree Earned | Anticipated Rank/Experience Desired | Area of Degree Specialty | Year of Program to Be Employed | Full-time or% Part-time (Visiting) in Program |
| 1 | M.Phil. Haematology | Lecturer, Haematology2 year experience | Haematology | 2023 | Full-Time |
| 1 | M.Phil.Histopathology | Lecturer, Histopathology2 year experience |  | 2024 | Full-Time |
| Total Full-time Faculty in Program: 6Total Part-time (Visiting) Faculty in Program: NIL |

|  |
| --- |
| **Resources** |
|  | **Existing** | **Required** |
| Building | 4 Rooms (for 50 students each) | 4Rooms(for next year) |
| Furniture | Not Available | 200 chairs +desk(4) |
| Equipment | Not Available | Multimedia(4)+mike(4) |
| Library (books, journals, etc) | Available( VERY LESS) | Given in Course outlines |
| Laboratories | Available | Refrigerators(2) |

**Comparison of Roadmap**

|  |
| --- |
| (FOUR YEARS PROGRAM) BS MEDICAL LABORATORY SCIENCES (ROAD MAP)  |
|  |  |  |  |  |  |  |  |  |
|  FALL 17 - OLD ROAD MAP FOR MLS |  | FALL 2022 - New ROAD MAP FOR MLS |
| **Semester 1** |  | **Semester 1** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |  | **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.101 | Anatomy I | 4 | None |  | SHS.101 | Anatomy I | 4(3-1) | None |
| SHS.102 | Physiology I | 3 | None |  | SHS.102 | Physiology I | 3(2-1) | None |
| SHS.103 | Biochemistry & Genetics I | 3 | None |  | SHS.114 | Biochemistry I | 3(2-1) | None |
| SHS.104 | English I | 3 | None |  | SHS.104 | English I | 3(3-0) | None |
| SHS.105 | Islamiyat I | 2 | None |  | SHS.105 | Islamiyat-I | 2(2-0) | None |
| SHS.106 | Introduction to Computers I | 3 | None |  | SHS.106 | Introduction to Computers-I | 3(2-1) | None |
|  |  | 18 |  |  |   |   | 18 |   |
|  |  |  |  |  |   |
| **Semester 2** |  | **Semester 2** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |  | **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.107 | Anatomy II | 4 | None |  | SHS.107 | Anatomy II | 4(3-1) | SHS.101 |
| SHS.108 | Physiology II | 3 | None |  | SHS.108 | Physiology II | 3(2-1) | SHS.102 |
| SHS.109 | Biochemistry & Genetics II | 3 | None |  | SHS.115 | Biochemistry II | 3(2-1) | SHS.114 |
| SHS.110 | English II | 3 | None |  | SHS.110 | English II | 3(3-0) | None |
| SHS.111 | Pakistan Studies  | 2 | None |  | SHS.111 | Pakistan Studies  | 2(2-0) | None |
|  |  | 15 |  |  | MLS.101 | Introduction to Medical Lab Sciences | 3(2-1) |   |
|  |  |  |  |  |   |   | 18 |   |
| **Semester 3** |  | **Semester 3** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |  | **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.201 | Anatomy III | 3 | SHS.107 |  | SHS.201 | Anatomy III | 3(2-1) | SHS.107 |
| SHS.202 | Physiology III | 3 | SHS.108 |  | SHS.202 | Physiology III | 3(2-1) | SHS.108 |
| SHS.203 | Biochemistry & Genetics III | 2 | SHS.109 |  | SHS.204 | English III | 3(3-0) | SHS.110 |
| SHS.204 | English III | 3 | SHS.110 |  | SHS.205 | Biostatistics I | 3(3-0) | None  |
| SHS.205 | Biostatistics I | 3 | None  |  | MLS.201 | Molecular Biology | 3(2-1) | SHS.115 |
|  |  | 14 |  |  | SHS-219 | International Relations  | 2(2-0) |   |
|  |  |  |  |  |   |   | 17 |   |
| **Semester 4** |  | **Semester 4** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |  | **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.208 | Behavioral Sciences | 3 | None |  | SHS.208 | Behavioral Sciences | 3(3-0) | None |
| SHS.209 | Biostatistics II | 3 | SHS.205 |  | SHS.209 | Biostatistics II | 3(3-0) | SHS.205 |
| SHS.210 | Anatomy IV | 3 | SHS.201 |  | MLS.202 | General Microbiology and sterilization | 3(2-1) | MLS.201 |
| SHS.217 | Intro to Lab Practice  | 3 | None |  | MLS.203 | Haematology I | 3(2-1) | None |
| SHS.218 | Biomedical Instrumentation | 3 | None |  | MLS.204 | Biomedical Instrumentation | 3(2-1) | None |
| SHS 219 | Quality assurance and Management | 2 | None |  | MLS.205 | Basic Clinical Chemistry | 3(2-1) | None |
|  |  | 17 |  |  |   |   | **18** |   |
|  |  |  |  |  |   |   |   |   |
| **Semester 5** |  | **Semester 5** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |  | **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.301 | Pathology & Microbiology I | 3 | SHS.201 & SHS.202 |  | MLS.301 | Haematology II | 3(2-1) | MLS.203 |
| SHS.302 | Pharmacology I | 2 | SHS.202  |  | SHS.302 | Clinical Bacteriology and Mycology | 3(2-0) | SHS.202  |
| SHS.303 | Sociology  | 2 | None |  | MLS.303 | Blood Banking and Transfusion Medicine | 3(2-1) | MLS.203 |
| SHS.310 | Clinial Chemistry I | 3 | SHS.203 |  | MLS.304 | Basic Immunology and Serology | 3(2-1) | None |
| SHS.311 | Hematology I | 3 | SHS.203 |  | MLS.305 | Basic Pathology and Histology | 2(2-0) | None |
| SHS.350 | Supervised Clinical Practice I | 3 | SHS.201 & SHS.202 |  | SHS.364 | Patient Safety | 1(1-0) | None |
| SHS 361 | Patient Safety I | 1 | None |  | MLS.306 | Quality Assurance and Management | 2(2-0) | None |
|  |  | 17 |  |  | **SD.100** | English Immersion | 0 |   |
|  |  |  |  |  |   |   | **17** |   |
| **Semester 6** |  | **Semester 6** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |  | **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.317 | Pathology II | 2 | SHS.301 |  | SHS.317 | Pathology II | 2(2-0) | MLS.305 |
| SHS.318 | Microbiology II | 2 | SHS.301 |  | MLS.307 | Human Genetics  | 3(2-1) | SHS.206 |
| SHS.314 | Pharmacology II | 2 | SHS.302 |  | SHS.320 | Virology & Parasitology | 3(2-1) | MLS.202 |
| SHS.325 | Hematology & Blood Banking  | 3 | SHS.311 |  | SHS-365 | Pharmacology | 2(2-0) |  SHS-115 |
| SHS.320 | Virology & Parasitology | 3 | SHS.301 |  | MLS.308 | Epidemiology and Public Health | 2(2-0) | None |
| SHS.360 | Supervised Clinical Practice II | 3 | SHS.350 |  | MLS.309 | Research Methodology | 2(2-0) | SHS.209 |
| SHS 362 | Patient safety II | 1 | None |  | MLS.310 | Clinical Lab Practice I | 3(0-3) | MLS.205 |
|  |  | 16 |  |  | **SD.101** | 21st Century Skills | 0 |   |
|  |  |  |  |  |   |   | **17** |   |
| **Semester 7** |  | **Semester 7** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |  | **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.416 | Histopathology & Cytopathology | 3 | SHS.325 |  | MLS.401 | Forensic Science and Cytogenetics | 3(2-1) | MLS.308 |
| SHS.417 | Clinical Chemistry II | 3 | SHS.317 |  | MLS.402 | Medical Biotechnology and gene manipulation | 3(2-1) | MLS.201 |
| SHS.418 | Immunology & Serology  | 3 | SHS.325 |  | MLS.403 | Bioinformatics | 3(2-1) | MLS.308 |
| SHS.419 | Medical Statistics & Research Methods  | 3 | SHS.404 |  | MLS.404 | Histological & Cytological techniques | 3(3-0) | MLS.305 |
| SHS.470 | Supervised Clinical Practice III | 3 | SHS.360 |  | MLS.405 | Clinical Lab Practice II | 3(0-3) | MLS.310 |
| SHS 439 | Molecular biology and Genetics | 3 | SHS 109 |  |  SHS.491 | Research Project Proposal | 1(1-0) |  MLS. 309 |
|  |  | 18 |  |  |  | Community services | 80 hrs |   |
|  |  |  |  |  |   |   | **16** |   |
| **Semester 8** |  | **Semester 8** |
| **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |  | **Course code** | **Course** | **Cr. Hours** | **Pre-requisite** |
| SHS.433 | Advanced Clinical Chemistry  | 3 | SHS.417 |  | MLS.406 | Advanced Clinical Chemistry  | 3(2-1) | MLS.303 |
| SHS 440 | Advance Clinical immunology | 3 | SHS 109 |  | MLS.407 | Advanced Clinical Microbiology  | 3(2-1) | MLS.202 |
| SHS.423 | Evidence Based Practice  | 3 | None |  | MLS.408 | Clinical lab establishment and management | 3(3-0) | None |
| SHS.490 | Research Project for allied health sciences | 6 | SHS.209 |  | MLS.409 |  Advanced Clinical Immunology | 3(2-1) | MLS.304 |
| SHS.480 | Supervised Clinical Practice IV | 3 | SHS.470 |  | MLS.410 | Research Project for Allied Health Sciences | 6(0-6) | MLS.404 |
|  |  | 18 |  |  |   |   | **18** |   |
|  |  |  |  |  |   |   |   |   |
|  | Total credit hours | **133** |  |  |   | **Total Cr. Hours** | **139** |   |

**Summary of revisions suggested in the roadmap**

Total credit hours = 139

**BS Medical Laboratory Sciences**

1. **List of courses deleted**

|  |  |  |
| --- | --- | --- |
| **Basic Medical sciences courses** | **Cohort courses** | **Degree Specific Courses** |
| * Anatomy IV
* Biochemistry & Genetics-III
* Pathology and Microbiology-I
* Microbiology II
* Supervised Clinical Practice-III
* Supervised Clinical Practice-IV
* Evidence based practice
 | * Sociology
 | * Clinical Chemistry-II
 |

1. **List of courses for revised titles and course codes**

|  |  |  |
| --- | --- | --- |
| **Previous courses**  | **Amendments (Course title & Credit hours** | **Suggested Credit hours** |
| Introduction to Lab practice (3) | Introduction to Medical Lab Technology | 3(2-1) |
| Advance Molecular Biology (3) | Molecular biology  | 3(2-1) |
| Hematology & Blood banking (3) | Blood banking and transfusion medicine  | 3(2-1) |
| Clinical chemistry-I (3) | Basic Clinical Chemistry  | 3 (2-1) |
| Pathology & Microbiology-I (3) | Basic Pathology & Histology  | 2(2-0) |
| Histopathology & Cytopathology (3) | Histological and Cytological techniques  | 3(2-1) |
| Medical statistics & Research Methods (3) | Research Methodology  | 2(2-0) |
| Supervised Clinical Practice-I (3) | Clinical Lab Practice-I  | 3(0-3) |
| Supervised Clinical Practice-II (3) | Clinical Lab Practice-II  | 3 (0-3) |
| All other courses  | Separate practical and theory hours  |  |

1. **List of courses for new course code**

|  |  |  |
| --- | --- | --- |
| **Suggested courses**  | **Credit hours** | **New Course Code** |
| General Microbiology & Sterilization | 3(2-1) | MLS 202 |
| Clinical bacteriology and Mycology | 3(2-1) | MLS 302 |
| Hematology-II | 3(2-1) | MLS 301 |
| Blood banking & Transfusion medicine | 3(2-1) | MLS 303 |
| Histological & Cytological techniques | 3(2-1) | MLS 307 |
| Epidemiology & Public health | 2(2-0) | MLS 309 |
| Clinical Lab Practice-I | 3(0-3) | MLS 310 |
| Clinical Lab Practice-II | 3(0-3) | MLS 405 |
| Forensic Science and cytogenetics | 3(2-1) | MLS 401 |
| Human Genetics | 3(2-1) | MLS 402 |
| Bioinformatics | 3(2-1) | MLS 403 |
| Clinical Lab establishment and management | 3(3-0) | MLS 407 |
| Research project proposal | 1(1-0) | SHS.491 |
| Advance Clinical Microbiology | 3(2-1) | MLS 408 |
| International Relations | 2(2-0) | SHS.219 |
| English Immersion | 0 |  |
| 21st Century Skills | 0 |  |
| Community Services | 0 |  |

1. **List of courses for Revised titles and Course codes**

|  |  |  |  |
| --- | --- | --- | --- |
| **Old title** | **Old course code** | **New title** | **New Course Code** |
| **Shared courses** |  |
| Patient Safety-I | SHS-361 | Patient Safety | SHS.364 |
| Biochemistry & Genetics-I | SHS-103 | Biochemistry-I | SHS.114 |
| Pharmacology-I &II | SHS-302 &314 |  Pharmacology | SHS.365 |
| Biochemistry & Genetics-II | SHS-109 | Biochemistry-II | SHS.115 |
| **Program specific courses** |  |
| Intro to Lab Practice | SHS 217 | Introduction to Medical Lab Practice | MLS-101 |
| Histopathology & Cytopathology | SHS 416 | Histological & Cytological techniques | MLS 307 |
| Research project for allied health sciences | SHS.490 | Research project/thesis | SHS.492 |
| Immunology & Serology | SHS 418 | Basic Immunology and Serology | MLS 304 |
| Advance Molecular biology & Genetics | SHS 439 | Molecular biology | MLT.201 |
| **All the degree specific course have been given course code with MLT** |

**Formatting of course outlines:**

All the courses are formatted according to the HEC guidelines

|  |  |
| --- | --- |
| **Course Code** |  |
| **Pre-requisite**  |  |
| **Course Name** |  |
| **Credit Hours**  |  |
| **Course level** |  |

**Course description:**

**Course Objectives/learning outcomes:**

**Course content:**

**Practical work:**

**Suggested Reference/Text books & Useful Website**

**Layout of Courses (MLS)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Core Courses** | **General Elective Courses** | **University Electives**  | **Discipline specific** **Foundation Courses** | **Major Courses** | **Technical****Elective Subjects** |
| English I | Anatomy-I | English Emersion | General Microbiology & Sterilization | Clinical Bacteriology and Mycology | Adv. Clinical Chemistry |
| English II | Anatomy-II | 21st Century Skills | Forensic sciences & Cytogenetics | Hematology II | Adv. Clinical Immunology |
| English III | PHYSIOLOGY-I | Community services | Quality assurance and Management | Basic Clinical chemistry I | Adv. Clinical Microbiology |
| Pakistan Studies | Physiology-II |  | Hematology-I | Medical Biotechnology and Gene manipulation | Clinical establishment and management |
| Islamic Studies | Physiology-III |  | Biochemistry-I |  |  |
| Introduction to Computer Sciences | Pharmacology |  | Biochemistry-II | Human Genetics |  |
| Biostatistics-I | Anatomy-III |  | Medical Instrumentation |  |  |
| Biostatistics-II | Patient safety |  | Molecular Biology | Bioinformatics |  |
|  | **Supporting Science** |  | Introduction to Medical Lab Sciences | Histological & Cytological techniques |  |
|  | International Relations (Supporting Science) |  | Basic Immunology and Serology | Research Methodology |  |
|  | Behavioral Sciences(Supporting Science) |  | Basic pathology and Histology | Clinical Lab practice-I |  |
|  |  |  | Pathology II | Clinical Lab practice-II |  |
|  |  |  | Basic Clinical Chemistry | Research Project/Internship |  |
|  |  |  | Epidemiology and Public health | Virology &Parasitology |  |
|  |  |  | Blood banking and Transfusion Medicine | Research Project proposal |  |