



CURRICULUM

M.Phil and Ph.D (Basic Medical Sciences)

Prepared by

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DEAN: BASIC MEDICAL SCIENCES

**SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY
ISLAMABAD**

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ROAD MAP OF BASIC MEDICAL SCIENCES

The Basic Medical Science Department was given approval in the 29th academic council meeting held in November 2019 of SZABMU.

The SZABMU-Basic Medical Science Department will be one of the major department known for high quality academic and research activities in the different disciplines of basic medical sciences like Anatomy, Physiology, Biochemistry, Pharmacology, Pathology and community Medicine and Forensic Medicine, Molecular Biology and Dental Materials at national and international level.

The Basic Medical Sciences (BMS) program offers a didactic, multidisciplinary (broadly-based), and human biology-oriented curriculum. The BMS program will enhance the academic preparation of individuals holding a bachelor's, or professional degree who are seeking to subsequently matriculate into human, dental, or pharmacological professional degree programs.

The curriculum can facilitate career advancement of individuals employed in the areas of Basic Medical Sciences, biomedical research and science education.

The curriculum involves courses from several basic science departments and programs, each one representing a unique discipline within the SZABMU University.

At least one BMS CORE course from each of at least three different disciplines is required. The curriculum also has advanced basic medical science electives

COURSES OUTLINE

During the first year of MPhil leading to PhD program, students will have to complete their 30 credit hours course work. The course work will comprise of:

1. Compulsory courses for all the students irrespective of their field of specialty = 08 Credit Hrs
2. Core courses in the respective field of specialty =22 Credit Hrs

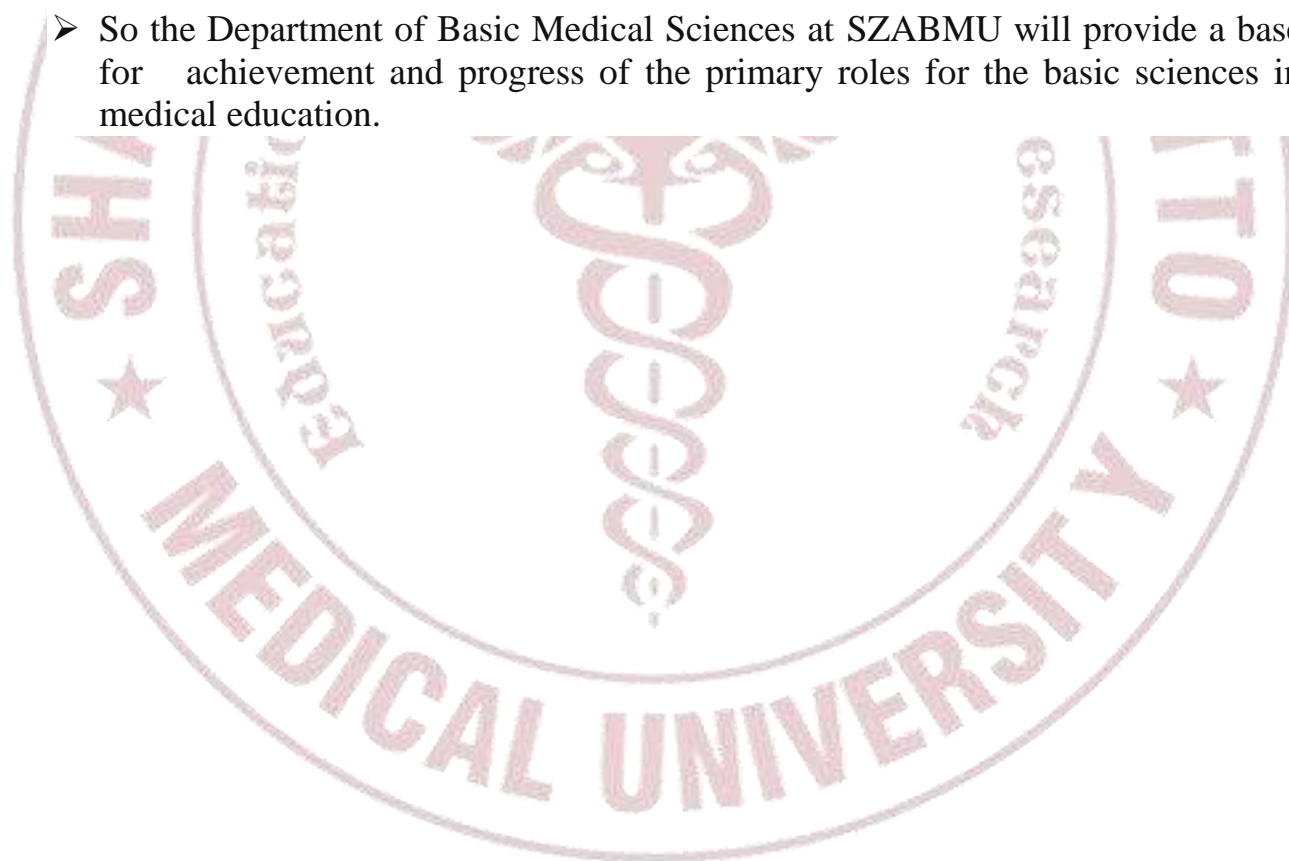
As per HEC guidelines, all PhD scholars will be required to follow additional 18 credit hours courses in addition to the courses completed during their MPhil studies.

Introduction

It is generally accepted that medical students should learn basic medical sciences, being basis for all clinical specialties which enable medicine to be rational.

The Basic Medical Science M.Phil./Ph.D. program is:

- To provide the basis for the development of clinical reasoning against which to evaluate new scientific and medical findings and makes it easier for physicians to adapt to changes in knowledge and practice evidence based medicine
- Studies have demonstrated that basic science instruction greatly enhanced the learning of novel related content, thus a strong basic science background provides the conceptual framework.
- However, traditional programs of teaching basic sciences have failed to provide better outcomes of learning as lack of integration of basic sciences with clinical sciences have often been perceived by students as lack of relevance of basic science to clinical medicine
- So the Department of Basic Medical Sciences at SZABMU will provide a base for achievement and progress of the primary roles for the basic sciences in medical education.



AIMS & OBJECTIVES AND FUNCTIONS

1. To provide properly qualified and trained basic sciences teachers for the growth and development of MBBS/BDS level education.
2. To produce more M.Phil and PhDs scholars, particularly in the fields of basic medical sciences like Anatomy, Physiology, Biochemistry, Pharmacology, Pathology and community Medicine, Forensic Medicine and Molecular Biology and dental materials.
3. To link the SZABMU-BMSI with the leading institutions both at national and international level for collaboration and exposure of local research scholars.
4. To keep updating of academicians through short refresher courses for dissemination latest Academic and research advancement in the field of basic medical sciences.
5. To produce better and well trained health care professionals for better health care delivery System and ultimately better health facilities for the Pakistani population.
6. To focus research on regional medical issues to improve the health standards of the community in this underdeveloped region of the world.
7. To Train human resource for successful execution and operations of the Institute which will fill the vacuum in the growing medical & dental colleges and industry.
8. To produce a human resource, especially in the field of research and technology which will ultimately help in the development of national economy.

ENTRY CRITERIA AND ADMISSION

ELIGIBILITY

Eligibility criteria for M. Phil and PhD Programs will be as under, unless changed or modified by the HEC

For M. Phil and PhD

- a) MBBS /BDS/ D-Pharm/ MLT/ BS/ M.Phil./ MS/ FCPS/MD/ MRCP/ FRCS/ FRCP/ or equivalent degree recognized by HEC with minimum CGPA 3.0 (out of 4.0 in the Semester System) or First Division (in the Annual System) in life sciences (at least 16 years of education; 130 credit hours).
- b) The candidate must pass in the written test with 50% marks for admission in M. Phil/ MS and 70% marks for admission in PhD.

ADMISSION

The eligibility criteria will at large be in conformity with HEC and SZABMU policies.

In principle, the following criteria are required:

- a) Applicants having 16 years or equivalent education in relevant field will be eligible for admission in M. Phil or PhD Program
- b) Applicants having 18 years or equivalent education in relevant field will also be eligible for admission in PhD Program provided they will only undertake 24 credit hour courses instead of 48 credit hour courses.
- c) Prior to entry into the M. Phil/ PhD program, the student shall have been awarded his or her MBBS/ BDS/ D-Pharm /MLT/ BS/ M.Phil./ MS/ FCPS/ MD/ MRCP /FRCS/ FRCP or equivalent degrees.
- d) For admission in PhD program, a minimum CGPA of 3.0 (out of 4.0 in the semester system) or First Division (in the annual system) in the most recent degree obtained is required, whether such degree was obtained from Pakistani or foreign universities.
- e) As part of the application for admission to M. Phil/PhD program, applicants will be required to submit a statement of purpose. The admissions committee will use

the information provided to ascertain the preparedness and interest of the candidate in pursuing doctoral studies, and whether the department has the requisite resources to train and supervise the doctoral candidate in the subspecialty he or she is interested in.

- f) All applicants to PhD programs shall be required to take one of the following subject specific admissions test:
 - i. The Graduate Record Examination (GRE) test administered by the Education Testing Service;
 - ii. A graduate admission test administered by the Education Testing Council; or
 - iii. With the permission of the HEC, an equivalent test developed by the SZABMU for admissions to post-graduate programs.

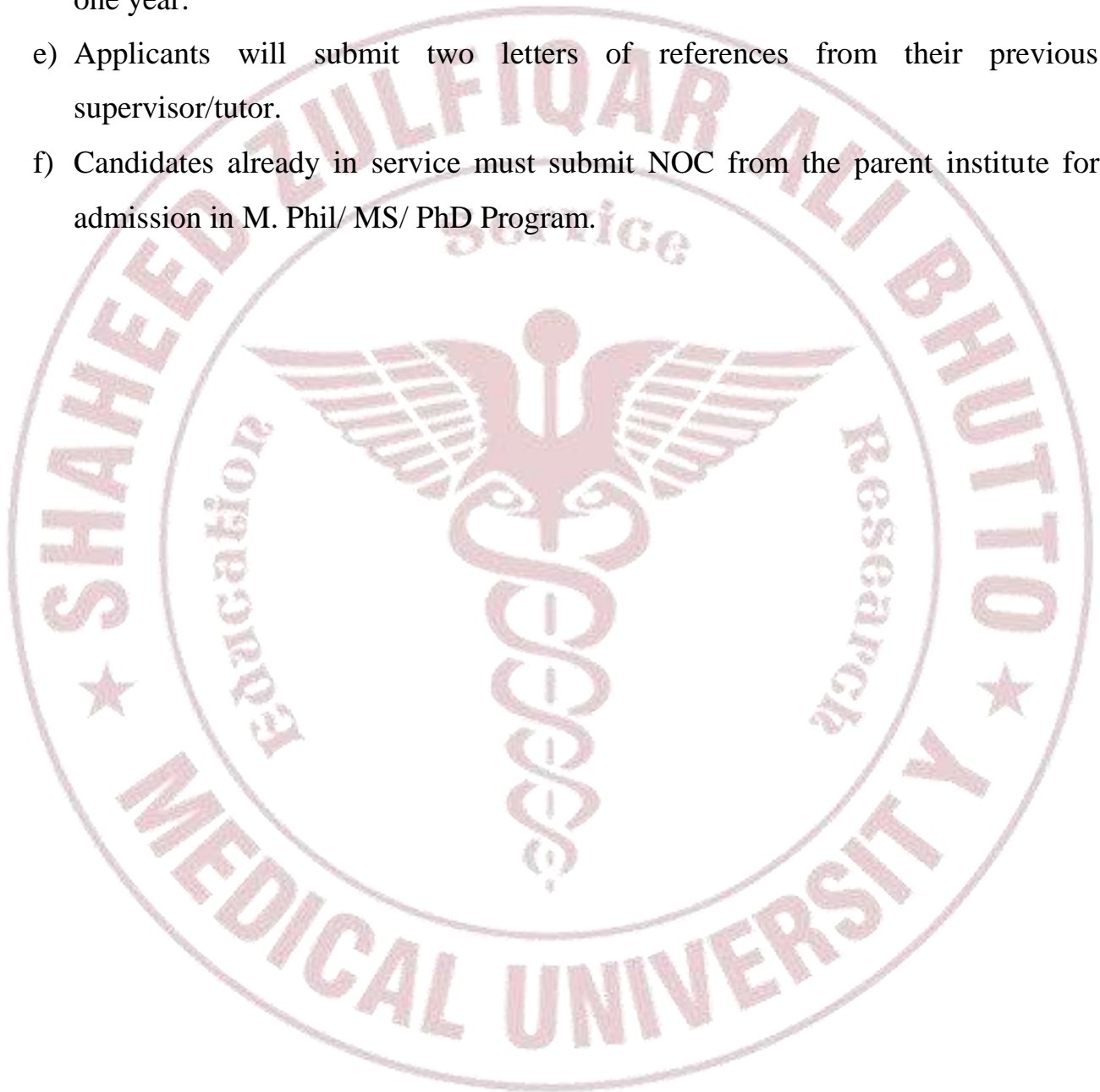
Prior Degree in Different Discipline:

Consistent with best practices internationally (including leading global universities), it shall generally not be a requirement for admission to a PhD program that the applicant shall have completed a prior degree in the same discipline. If the applicant has a strong interest in pursuing a PhD degree in a different discipline and, in accordance with the department's policy, the admissions committee is satisfied that the applicant's prior education has sufficiently prepared him or her to undertake the course of studies of the doctoral program (or, in the opinion of the admissions committee, the preparation can be deemed satisfactory by taking a few additional courses after starting the program), the applicant shall be considered for admissions notwithstanding their prior qualification in a different discipline.

An initial advertisement in each subject will be announced according to available slots with each potential supervisor in the Division according to the HEC rules. After an initial advertisement by the University for opening up the PhD program for various subjects, applications will be invited based on the Eligibility criteria.

- a) Application for admission to the PhD is to be made on the official application form available at SZABMU website along with requisite documents.
- b) Applicants will identify a potential supervisor at the time of application

- c) Applicants will submit a “statement of research interests” (not a research proposal), along with their academic/research publications and information about their previous research & teaching experiences.
- d) Entry test will be conducted by the ETS or university and its validity will be for one year.
- e) Applicants will submit two letters of references from their previous supervisor/tutor.
- f) Candidates already in service must submit NOC from the parent institute for admission in M. Phil/ MS/ PhD Program.



SELECTION CRITERIA

- a) Short listed candidates will be invited for interview by the M. Phil and PhD admission committee of the University.
- b) The admission committee will consist of the following:
 - 1) Vice-Chancellor (Chairman)
 - 2) Dean of Relevant Specialty (Co-Chairman)
 - 3) Director, Postgraduate studies
 - 4) Head of Department (Secretary)
 - 5) Two Faculty members involved in teaching PhD program

During the selection process the following elements will be considered:

1. Academic record of candidate
 2. Research publications
 3. Potential supervisor and the availability of resources for the research
 4. Demonstration of the ability to pursue doctoral-level research based on the “Statement of Purpose” at the time of admission.
- c) Names of the candidates recommended by the Admission Committee for admission to PhD program will be forwarded by the HOD to the M. Phil and PhD Committee for finalization by the Vice Chancellor.
 - d) Admission letters to the selected candidates will be issued by the PG Cell with a copy to the HoD.
 - e) The selected candidates will be required to join on or before the date given in the offer letter, the failure to do so will result in cancellation of admission.

ENROLLMENT M.PHIL & PhD CANDIDATURE

- a) Selected candidates will be offered enrollment as candidate for M. Phil and PhD degree.
- b) M. Phil and PhD student's enrollment will be made for the first 2-years of full-time study following the date of registration following the residency requirement for a period of at least two years in new HEC PhD policy.
- c) During enrollment the student will be referred to as **“M. Phil and PhD Candidate”**
- d) Upon enrolment, the HOD will assign suitable Supervisory Committee comprising of Supervisor/s, Co-Supervisor (if required) to the scholar. The HOD will issue letter of appointment to the Supervisor/s and the Co-supervisor/s.
- e) The purpose of enrollment is to enable the M. Phil and PhD Committee to confirm the ability of the candidate to complete M. Phil and PhD satisfactorily and to provide guidance to the candidate regarding the rate of progress estimated.

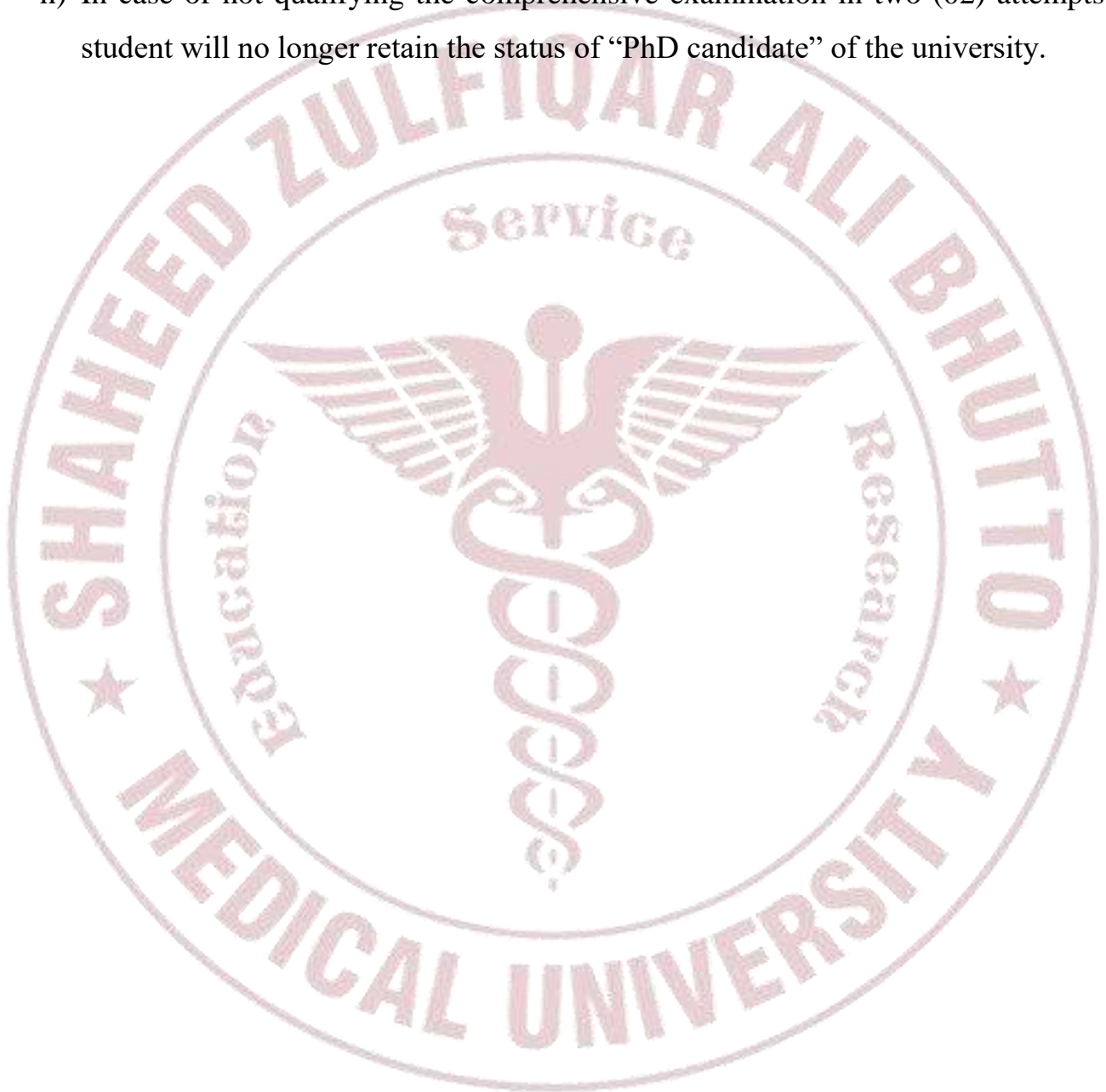
M. PHIL AND PHD COURSEWORK

- a) The PhD degree requires 48 graduate credits earned by completing the coursework. PhD will include 4 semesters of course work (for students who have done BS 4 years or completed 16 years education) along with 2 to 10 semesters of research. During the first 4 semesters of course work, 16 courses (3 credit hours each) will be taught. PhD course work will include 2 semester course work, 8 courses (3 credit hours each) for students who have done M. Phil or completed 18 years education, along with 4 to 12 semesters of research.
- b) The Master of Philosophy (MPhil) require 24 graduate credits earned by completing the coursework. During the first 2 semesters of course work, 8 courses (3 credit hours each) will be taught. The M. Phil Candidate must undertake twenty-four (24) credit hour of coursework.

COMPREHENSIVE EXAMINATION

- a) Following the completion of coursework, every PhD student shall be required to pass a comprehensive examination in order to be granted candidacy as PhD researcher; provided that if the student fails to pass the comprehensive test, he or she shall be allowed one more attempt to take the test.
- b) Comprehensive Examination must be conducted at the end of one year of enrollment.
- c) Paper of the comprehensive examination will be made by the Head of Department in consultation with the course facilitators.
- d) Comprehensive examination will have a theory paper of 100 marks and a viva of 50 marks. Final result will be announced out of 100 marks in which 70% marks will be taken from the theory in which the Viva Voce examination marks will be added to compile the final score.
- e) Passing marks for PhD Comprehensive examination will be 65%.

- f) The viva will be conducted through the Head of Department and will cover areas relevant to the research proposal/synopsis of the PhD candidate.
- g) PhD Candidates must pass the comprehensive examination in two attempts i.e., within two years of enrollment in the PhD program.
- h) In case of not qualifying the comprehensive examination in two (02) attempts student will no longer retain the status of “PhD candidate” of the university.



SYNOPSIS/RESEARCH PROPOSAL:

APPROVAL BY ASRB

- a) After approval from the Supervisory committee the synopsis on the prescribed university format should be forwarded through the Head of Department to the M. Phil and PhD SRC for approval.
- b) Ethical review committee will evaluate the synopsis after its approval from M. Phil and PhD SRC via a formal request to the Registration Department by the candidate through the HoD.
- c) The Synopsis/Research Proposal with the approval letters of both the M. Phil and PhD SRC and the ERC will be submitted to the registration department through HoD to be placed in ASRB for final approval.
- d) The intellectual property rights and responsibilities approved by SZABMU have to be strictly followed by all involved in research.

REGISTRATION

- a) To be registered as a “**M. Phil and PhD Scholar**” with the SZABMU; candidate must give proof of following:
 1. Completion of 24 credit hours for M. Phil and 48 credit hours’ coursework for PhD
 2. Passing the Comprehensive Examination for PhD
 3. Approval of Research Synopsis/proposal by ASRB of the University
- b) All the three proofs should be sent with a cover letter by the Head of the Department to the M. Phil and PhD committee.
- c) The M. Phil and PhD Committee after being satisfied will forward the documents to the Registration Department to issue a registration number to the M. Phil and PhD Candidate and give him/her status of a SZABMU “**M. Phil and PhD Scholar**”

PROGRESS REPORT OF M. PHIL AND PHD SCHOLAR

- a) There will be a biannual review of research progress of the M. Phil and PhD Scholar by the HoD.
- b) At the end of every six months after confirmed registration, M. Phil and PhD scholar would submit a summary of the progress of the research work on a specific proforma through the Supervisor to the Head of the Department to be forwarded to the M. Phil and PhD Committee.
- c) Subject to the satisfactory progress of the research work, the Head of the Department would recommend the continuation of the scholar’s registration.
- d) In case of more than two unsatisfactory reports forwarded to the M. Phil and PhD Committee, the scholar will be notified in written and given reasonable opportunity to respond to the M. Phil and PhD Committee. In Case M. Phil and PhD Scholar fails to satisfy the committee, the committee will recommend removal of his/her name from university register.

- e) There will be a time of 15 days given to the scholar to appeal to the ASRB through the Vice Chancellor against the decision and final decision of ASRB will be implemented.

THESIS SUPERVISION

- a) The PhD dissertation shall be supervised by a faculty member who holds a PhD (or equivalent) degree and is an HEC approved supervisor. At the time of appointment as supervisor, the faculty member shall be a full-time faculty member of the university in which the student is enrolled.
- b) The Supervisory committee including the Supervisors/Co-supervisors will be appointed with the mutual consent of the candidate, the persons being appointed and the HoD.
- c) There can be maximum four (04) members in the supervisory committee with a maximum of two (02) Supervisors. In case of more than one supervisor, the supervisor from concerned department will be called Principal Supervisor
- d) The administrative in-charge will be the supervisor of the department in which the student is enrolled.
- e) One Supervisor should be the fulltime faculty member of the university and must be from the specialty that the student is enrolled in.
- f) In case a full time faculty member is not experienced in a particular field of research an adjunct faculty members of the university may act as supervisor with the consent of the HoD and approval of the M. Phil and PhD Committee.
- g) Eligibility of the Supervisor/co-supervisor will be in line with the HEC/PM&DC guidelines (ref. 1-1 (NQF)/QAD/2017/HEC/502 dated July 21, 2017). A PhD faculty member can supervise PhD research work only after he/she has become HEC approved supervisor by acquiring minimum three (03) years of relevant teaching/research/professional experience in university along with co-supervision of at least two (02) PhD/MPhil level thesis with a senior/HEC approved PhD supervisor. A PhD faculty member who got his/her MS/M. Phil/Equivalent degree four (04) years ago can supervise the MPhil program students

as per policy of HEC given in letter no. 1-1 (NQF)/QAD/2017/HEC/501 dated July 21, 2017.

- h) A PhD supervisor can supervise (as a supervisor or co-supervisor) a total of twelve (12) PhD/MPhil program students at a time with no more than five (05) of these being PhD students.
- i) Supervisor/s will have appropriate qualifications, including extensive knowledge and research experience in the broad subject area of the student and current involvement in research groups.
- j) ASRB may also appoint a co-supervisor to provide the link if the research is of an interdisciplinary nature or if the research is being undertaken in collaboration with another organization.
- k) A Supervisor, co-supervisor or adviser will not be related to a student by consanguinity or by affinity to the third degree inclusive or have a dual relationship with the student.
- l) Changes in composition of supervisory committee that is change of a Supervisor/Co-supervisor or addition of a supervisor/co-supervisor can be sought by the M. Phil and PhD Scholar and/or members of the SC through the HOD. The application must be accompanied by the written consent from both the current Supervisor/Co-supervisor and the new proposed Supervisor. When ASRB is satisfied that there is sufficient reason, it may change the Supervisor/Co-Supervisor of the Candidate on the request of either Scholar or the Principal Supervisor.
- m) Approved Synopsis/ Research Proposal is the Property of Supervisor, in case of change of Supervisor a Satisfactory reason should be given to work on the same topic/project with proper recognition to previous supervisor i.e. in authorship of Publication. In other case along with change of supervisor a new Research Proposal should be submitted with sufficient changes to accommodate the new Proposed Supervisor with special focus on its Specialty.

CHANGE OF THESIS/PROJECT TITLE

- a) A candidate may change the topic of his/her research with the approval of the ASRB by submitting an application duly supported by the Supervisor, Head of Department and recommended by the M. Phil and PhD Committee.
- b) The final title of the thesis will be approved by the ASRB before the submission of thesis.

FREEZING OF REGISTRATION/DISCONTINUATION OF M. PHIL AND PhD RESEARCH

HEC/PMC rules will be followed for termination or freezing of M. Phil and PhD programs:

- a) Where M. Phil and PhD Scholar is unable to continue with their research program because of circumstances beyond their control, the Advanced Study and Research Board (ASRB) may suspend their registration for a specified period of maximum up to 1 year.
- b) The Scholar must be able to satisfy the ASRB of the University that any period of freezing will not adversely affect the viability of the candidate's research after consultation with the Supervisory Committee and HOD.
- c) Any period of freezing will be excluded from the calculation of the final submission date.
- d) While registration is suspended, a Scholar is exempted from fees, and is not entitled to any tuition or supervision, or to the use of any other research resources of the University.

THESIS SUBMISSION, EVALUATION & DEFENCE

Submission

- a) Submitted thesis must accompany the plagiarism report along with all other documents prescribed by the Examination department of SZABMU.
- b) When the ASRB is satisfied that there is sufficient reason, it may extend candidate's submission date maximum to six months on the recommendations of M. Phil and PhD Committee.
- c) At the time of submission of thesis, the supervisor would submit a list of the suitable local and foreign examiners that have relevant subject expertise through the HOD to ASRB for approval.

Evaluation

- a) In addition to the PhD committee members, the PhD dissertation must be evaluated by at least two external experts who may be either (i) Pakistan-based Distinguished National Professors, Meritorious Professors, or Tenure Track Professors, or (ii) PhD experts from academically advanced countries (approved list of academically advanced countries for evaluation of PhD Dissertation is provided in Annex 4.4(b)); provided, however, that if the PhD candidate publishes his or her dissertation research in a peer reviewed journal that is classified by the HEC as category X or above, the PhD dissertation will only require evaluation by one external expert. Thesis submission should be done within three to seven years of enrollment in the program.
- b) The ASRB would nominate four suitably qualified External foreign examiners from technologically advanced countries (HEC List) and two local PhD external examiners for evaluation of the thesis from the list provided by the Head of the Department.
- c) Each examiner will be provided with an electronic copy of the thesis and, acting independently, is required to provide the Controller of Examinations within two months of receipt of the thesis, with a written report on the quality of the thesis.

If there is no response from examiner in two months after two reminders, the examiner will be replaced.

- d) The examiners will include with their reports, on SZABMU approved evaluation proforma, one of the following recommendations:
1. To award the degree, subject to satisfactory performance at the oral examination.
 2. To award the degree after specified “minor corrections” have been made to the thesis, to the satisfaction of the oral examiner, by a specified date, and subject to satisfactory performance at the oral examination
 3. To permit the candidate to revise the thesis to incorporate the major changes suggested and resubmit it for examination.
 4. Not to award the degree.
- e) In case of recommendations of minor or major corrections, the scholar would be asked to submit the correction within a specific period for further evaluation.
- f) The evaluation reports of the examiners would be considered in the ASRB.
- g) The scholar would be allowed to proceed to the oral examination if
1. The evaluation reports approve her/his thesis.
 2. PhD researcher has published at least one research paper as its first author during his or her doctoral studies in an HEC approved Y category (or above) journal for the award of PhD degree.

Public Defense & Oral Examination

- a) The Controller of Examinations will arrange thesis examination
- b) Before the Oral examination, a public defense of the thesis will be presented by the scholar.
- c) Public defense will be open for the entire faculty and student participation will be compulsory.
- d) The examination must be attended by the Candidate, the Oral Examiners, and the Head of Department or a Nominee. The main supervisor or co-supervisor may attend but will not act as an examiner and may only participate.

- e) The examiners will be provided the evaluation report of the thesis by foreign and local examiners
- f) On completion of the oral examination, the Head of Department will provide a written report endorsed by the Examiners. The report can include following recommendations:
 - a. To award the degree, subject to satisfactory performance at the oral examination.
 - b. To award the degree after specified “minor corrections” have been made to the thesis, to the satisfaction of the oral examiner, by a specified date, and subject to satisfactory performance at the oral examination
 - c. To permit the candidate to revise the thesis to incorporate the major changes suggested and resubmit it for examination.
 - d. Not to award the degree.
- g) After considering all of the reports of the examiners, the ASRB will make the final decision as to the award of the M. Phil and PhD degree.

Reporting Requirements to HEC after degree completion

The following documents shall be submitted to the HEC following the completion of studies:

- a. A duly filled completion form shall be sent to the HEC from the Office of the Controller of Examinations of the university notifying the HEC that the PhD scholar has completed all the requirements for the award of the PhD degree.
- b. A copy of PhD Dissertation for including in PhD Country Directory and for attestation of the PhD degree by the HEC.
- c. A duly filled Performa for the PhD Country Directory, signed by the Principal Supervisor, Controller of Examination and the Vice Chancellor (or Rector).

Research Publication incentives by Institution

- a) Publication honorarium of Rs 20,000 for W, 10,000 for X and 5,000 for Y category will be provided to all authors of research article who have co-authored the publication with SZABMU affiliation.
- b) Institution (SZABMU) will cover the article processing charges of research articles accepted in HEC recognized impact factor journals.



Scheme of Studies for Ph.D in Basic Medical Sciences

Course Code	Course	Credit Hours		Course Code	Course	Credit hours
Semester 1				Semester 11		
SZABMU-BMS-801	Advance research methodologies	3 +1		SZABMU-BMS- 802	Advance Technique in data analysis	3
SZABMU-BMS- 802	Bio-informatics and Biostatic	3+0		SZABMU-BMS- 812	Elective 11 (Physiology, Pharmacology, Community Medicine)	3+1
SZABMU-BMS- 811	Elective – 1 (Physiology, Pharmacology, Community Medicine)	3 +1		SZABMU-BMS- 813	Elective-11 (Physiology, Pharmacology, Community Medicine)1	3 + 1
	Total	11			Total	11
Semester 111 and 1V, V and V1						
SZABMU-BMS-code	Synopsis, Research plus Dissertation					30
\ 44/	Total Credit Hours of Program					52

- ❖ 9 credit hours of Core courses for all.
- ❖ 9 plus credit hours of respective specialty
- ❖ Degree Title will be Ph.D in Basic Medical Sciences (Physiology or Pharmacology or Community Medicine)

Scheme of Studies for M.Phil in Basic Medical Sciences

- ❖ 8 credit hours of compulsory courses for all.
- ❖ 22 plus credit hours of Course of respective Discipline/specialty
- ❖ 4-6 Credit Hours of Elective Course in the field of research,
- ❖ Degree Title will be M.Phil in Basic Medical Sciences (Physiology or Pharmacology and Molecular Biology)

M. Phil degree Compulsory courses for all subjects:

<u>Course code</u>	<u>Course Title</u>	<u>Credit Hrs</u>
SZABMU-BMS701	Cell Biology	1+0
SZABMU-BMS702	Medical Genetics and Molecular Biology	2+0
SZABMU-BMS703	Epidemiology and Biostatics, and SPSS data analysis	2+0
SZABMU-BMS704	Communication Skills, Literature Search and Medical Writing	1+0
SZABMU-BMS705	Journal Club, Seminar and Symposium	0+0
SZABMU-BMS706	Research Methodology and Research Techniques	2+0
		Total: 8+0

Core Courses of Each Discipline

Physiology:

Course Code	Course Title	Credit Hours
SZABMU-PHY711	Cell and General Physiology plus Nerve and Muscle Physiology	2+1
SZABMU-PHY 712	Neurophysiology(Sensory, Motor, Autonomic and Special Senses)	4+1
SZABMU-PHY 713	Blood, Cardiovascular and Respiratory Physiology	4+1
SZABMU-PHY 714	Body Fluids, Renal & GIT Physiology	2+1
SZABMU-PHY 715	Endocrinology & Reproductive Physiology	3 + 1
SZABMU-PHY 716	Aviation, Space & Deep-Sea Diving and Sports Physiology	1+0
SZABMU-PHY 717	Experimental Physiology	1+0
	Total	22

<u>ANATOMY</u>		
SZABMU-ANA706	Developmental Anatomy (Embryology)	3+1 Credit Hrs
SZABMU-ANA707	Microscopic Anatomy (Histology)	3+1 Credit Hrs
SZABMU-ANA708	Neuro-anatomy	2+1 Credit Hrs
SZABMU-ANA709	Micro techniques	2+0 Credit Hrs
SZABMU-ANA710	General Anatomy	1+0 Credit Hrs
SZABMU-ANA711		1.5+0 Credit Hrs
SZABMU-ANA712	Anatomy of Upper Limb	1.5+0 Credit Hrs
SZABMU-ANA713	Anatomy of Thorax	1+0 Credit Hrs

SZABMU-ANA714	Anatomy of Abdomen and Pelvis	2+0 Credit Hrs
SZABMU-ANA715	Anatomy of Head & Neck	2+0 Credit Hrs
<u>BIOCHEMISTRY</u>		
SZABMU-BIO706	Biochemistry I	3+1 Credit Hrs
SZABMU-BIO707	Biochemistry II	3+1 Credit Hrs
SZABMU-BIO708	Protein Chemistry	2+1 Credit Hrs
SZABMU-BIO709	Enzymology	2+1 Credit Hrs
SZABMU-BIO710	Biochemistry of Blood	2+0 Credit Hrs
SZABMU-BIO712	Chemistry of Respiration	1+0 Credit Hrs
SZABMU-BIO713	Biochemistry of Liver and Kidney	2+0 Credit Hrs
SZABMU-BIO714	Biochemistry of Cancer Radioisotopes	1+0 Credit Hrs
SZABMU-BIO715	Endocrinology	2+0 Credit Hrs
<u>Pharmacology</u>		
SZABMU-PHA701	General Pharmacology	2+0 Credit Hrs
SZABMU-PHA702	CNS Pharmacology	2+1 Credit Hrs
SZABMU-PHA703	ANS Pharmacology	2+1 Credit Hrs
SZABMU-PHA704	GIT, Hormones & Drugs Affecting Uterus	2+1 Credit Hrs
SZABMU-PHA705	Kidney, CVS & Respiratory System	2+1 Credit Hrs
SZABMU-PHA706	Clinical Pharmacology	2+0 Credit Hrs
SZABMU-PHA707	Chemotherapy	1+0 Credit Hrs
SZABMU-PHA708	Psycho Pharmacology	2+0 Credit Hrs

SZABMU-PHA709	Anti inflammatory and Autacoids	2+0 Credit Hrs
SZABMU-PHA710	Drugs Acting on the Blood	1+0 Credit Hrs
<u>Histopathology</u>		
SZABMU-HistoPATH701	General Pathology	3+0 Credit Hrs
SZABMU-HistoPATH702	Cardiovascular & Respiratory System	3+0 Credit Hrs
SZABMU-HistoPATH703	Gastrointestinal Tract	2+1 Credit Hrs
SZABMU-HistoPATH704	Urinary & Genital Systems	2+1 Credit Hrs
SZABMU-HistoPATH705	Nervous System, Endocrine and Mammary Glands	3+1 Credit Hrs
SZABMU-HistoPATH706	Liver, Gall bladder and Pancreas	2+1 Credit Hrs
SZABMU-HistoPATH707	Lymph nodes, Spleen and Thymus	2+1 Credit Hrs
<u>Hematology</u>		
SZABMU-HematPATH701	General Pathology	3+0 Credit Hrs
SZABMU-HematPATH702	Disorders of Red Blood Cell	3+1 Credit Hrs
SZABMU-HematPATH703	Disorders of White Blood Cell	2+1 Credit Hrs
SZABMU-HematPATH704	Blood Group Serology & Coagulopathies	3+1 Credit Hrs
SZABMU-HematPATH705	Biochemistry of Blood	2+1Credit Hrs
SZABMU-HematPATH706	Physiology of Blood, Blood Clotting & Immunity	2+1Credit Hrs
SZABMU-HematPATH707	Drugs Acting on the Blood	2+0 Credit Hrs
<u>Chemial pathology</u>		
SZABMU-ChemPATH701	General Pathology	3+1 Credit Hrs
SZABMU-ChemPATH701	Kidney-Electrolytes & Endocrines	3+1 Credit Hrs

SZABMU-ChemPATH701	Carbohydrates and Lipids	2+1 Credit Hrs
SZABMU-ChemPATH701	Proteins, Enzymes & Vitamin	2+1 Credit Hrs
SZABMU-ChemPATH701	Hepatobiliary, Acid Base Disorder & Reference Ranges	3+1 Credit Hrs
SZABMU-ChemPATH701	Drug Monitoring	2+0 Credit Hrs
SZABMU-ChemPATH701	Quality Control	2+0 Credit Hrs
<u>MICROBIOLOGY</u>		
SZABMU-MicroPATH701	General Microbiology	3+1 Credit Hrs
SZABMU-MicroPATH702	Systemic Clinical Bacteriology I	3+1 Credit Hrs
SZABMU-MicroPATH703	Systemic Clinical Bacteriology II	3+1 Credit Hrs
SZABMU-MicroPATH704	Immunology & Disorders of the Immune System	2+1 Credit Hrs
SZABMU-MicroPATH705	Medical Parasitology	2+0 Credit Hrs
SZABMU-MicroPATH706	Virology	2+0 Credit Hrs
SZABMU-MicroPATH707	Mycology	2+0 Credit Hrs
<u>FORENSIC MEDICINE AND TOXICOLOGY</u>		
SZABMU-FM&TOX701	General and Special Toxicology	3+1 Credit Hrs
SZABMU-FM&TOX701	Anatomy, Odontology and Pathology (related)	2+1 Credit Hrs
SZABMU-FM&TOX702	Serology DNA profile, Medicolegal aspects of Marriage, abortion and Asphyxial deaths	2+1 Credit Hrs
SZABMU-FM&TOX703	Thanatology, Traumatology, Medical Jurisprudence and legal procedures	2+1 Credit Hrs
SZABMU-FM&TOX704	Forensic toxicological aspects of blood, hair and body Fluids i.e., semen, saliva etc	2+0 Credit Hrs
SZABMU-FM&TOX705	Drugs Toxicology and its medicolegal aspects	2+0 Credit Hrs

SZABMU-FM&TOX706	Analytical Toxicology and toxicology of Therapeutic agents.	2+0 Credit Hrs
SZABMU-FM&TOX707	Blood groups, Serology, DNA profiling and its applications in Forensic Medicine.	2+1 Credit Hrs
<u>Ph.D Compulsory Courses</u>		
SZABMU-BMS801	Advances in Medical Genetics	3+0 Credit Hrs
SZABMU-BMS802	Advances in Epidemiology and Biostatistics	3+0 Credit Hrs
SZABMU-BMS803	Advances in Research Methodology	3+0 Credit Hrs
SZABMU-BMS804	Bioethics	3+0 Credit Hrs
SZABMU-BMS805	Computational Biology and Medical Bioinformatics	3+0 Credit Hrs

