MS EPIDEMIOLOGY AND BIOSTATISTICS

INSTITUTE OF PUBLIC HEALTH & SOCIAL SCIENCES

MS Epidemiology and Biostatistics

COURSE TITLE	MS epidemiology and Biostatistics
SPECIALITY	(Epidemiology, Biostatistics, Health Research)
COURSE DURATION	Minimum 2 years (including course work duration and Research Dissertation), Maximum 4 years (including course work duration)
TYPE OF STUDY	Full time
STUDY SYSTEM	4 semesters Total Contact Session = 6 Total Contact Days = 30 (5 x 6) Thesis 4th Semester
TOTAL CREDIT HOURS	Total Program Credit Hours = 36 Credit Hours per semester, for first 3 semester= 10 Credit Hours per session = 5
DISTRIBUTION OF COURSES AND CREDIT HOURS	Credit Hours per semester = 10 Credit Hours per session = 5 4th Semesters = 6 credit Hours (Research)
Course Load per Semester for Regular Full-Time Students	All credit hours are mandatory for students
TEACHING INSTITUTION **DEGREE AWARDING INSTITUTION**	Institute of Public Health and Social Sciences (IPH&SS) Khyber Medical University Peshawar (KMU)
ADMISSION CRITERIA	Doctor, Nurses, Pharmacist, Other Allied Health Professionals, Physiotherapist, Social Scientist, Public Health Professionals, Dentists, Veterinary, Bio-medical Scientists, Health Care Manager

Vision of the Program:

To be a leader in epidemiology and biostatistics with local impact and global significance

Mission of the Program:

To protect and improve the health of the people of the Khyber Pakhtunkhwa and Pakistan. Through interdisciplinary research, we seek to understand the forces that affect health of the people and the delivery of health services. We prepare the next generation of public health practitioners, epidemiologist, health care managers and scholars. Collaborating with government agencies and other partners, we develop solutions to current and emerging public health problems.

Introduction

The healthcare chain stretches from prevention of illness, diagnosis and care, to cure and maintenance of good health. With its expanding connections with international trends, it is starting to cross national borders as well. The opportunities and need for research within this new healthcare dynamic are endless. The Masters in health research is designed for educating a new generation of healthcare researchers to be on the cutting-edge of healthcare innovation.

There is an increasing need for research in the health sector, and increasingly health professionals are required to conduct research, evaluation, clinical audit and quality improvement activities as part of their practice. Current policy and practice developments are also placing greater emphasis on the Clinical Academic Career pathway and there are now many health professionals with a clinical/practice and research focus on their roles. These developments point to the need for rigorous, high-quality interdisciplinary and flexible research programs to prepare health professionals for these challenging and rewarding roles. The Master Health Research provides this.

Emphasis on professional research skills

MS Epidemiology and Biostatistics (MS Epi & Bio) degree program is designed to develop health research capacity among health care professionals with the purpose to promote research in health academic institutions and the health care system. In addition to the theoretical knowledge, students will also improve their practical research skills. So they will not only learn theory but will also learn how to conduct scientific investigations into these topics. They will practice all the stages of academic research, from systematic literature review, research hypothesis and question formulation, application of quantitative and qualitative methods, developing research project/proposals considering ethical and governance issues, data collection, management, analysis and interpretation of data using different quantitative & qualitative statistical tools, communicating research findings, and lead/ manage, foster research team and program.

The program covers all essential and relevant subjects in direct contact sessions with students which include lectures, workshops, and tutorials and constantly challenging the students to enhance their learning and skills by giving them regular assignments and encouraging guided self learning. The assignments are specifically aimed at developing writing skills and critical appraisal of published literature. Students are encouraged to learn and apply a range of research approaches and skills relevant to health services and clinical problems in developing country setting. After you have completed the program, you'll have all the skills you need start on your scientific career. This program

will give you a solid foundation in the interdisciplinary fields, frameworks and methods in socio-economic, social, clinical epidemiological or global health research.

Program Goal

To develops skilled and knowledgeable multi-disciplinary health care researchers, able to understand and confidently use research techniques appropriate to their practice/subject area

Program Objectives:

i. To give a detailed and comprehensive understanding to the students, of health research
ii. To enable students on how to apply a range of quantitative and qualitative research methods to current, pressing health issues and come up with solutions
iii. To enable students to critically assess published research

Outcomes:

The graduate should be able to:

1. Conduct systematic literature review (literature search, appraisal, synthesize and analyze)
2. Formulate research hypothesis and question (focused, answerable)
3. Apply quantitative and qualitative methods to answer a research question/ test hypothesis
4. Plan/design a research study/project (considering study population, setting, outcomes, exposures)
5. Develop research project/proposals considering ethical and governance issues
6. Collection, manage and analyze data using different quantitative & qualitative statistical tools
7. Communicate research findings to a range of audience
8. Able to lead, manage, foster research team and programs.

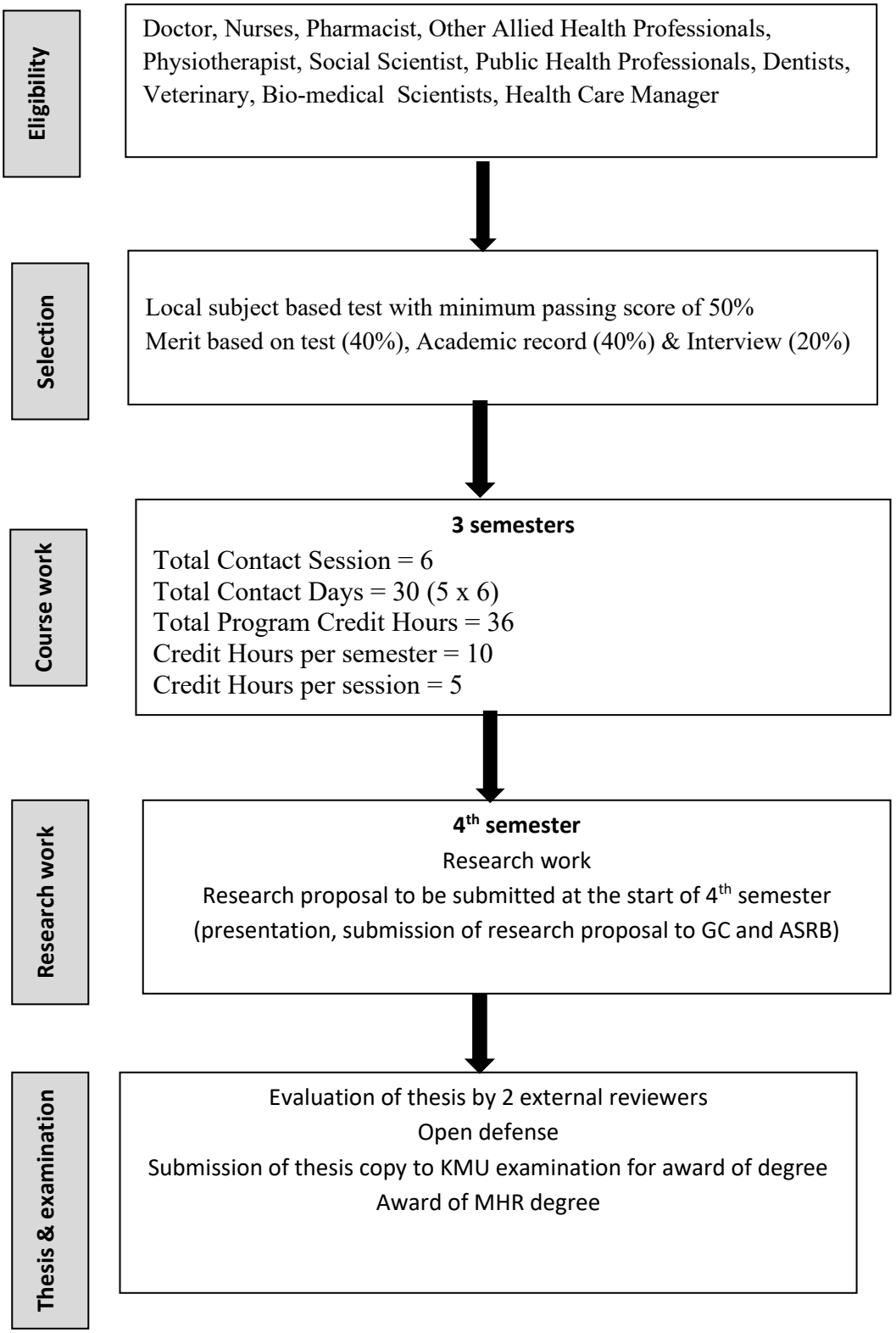
Program Organization and Structure

The total program duration is two years with a total of 06 contact sessions, each of 10 days. Attendance at these contact sessions is mandatory. The course can be taken as an advanced qualification in its own right or as excellent preparation for doctoral level study. Stand-alone modules are also available for those interested in Continuing Professional Development. The course has been designed to suit students from a diverse range of disciplinary backgrounds e.g. doctors, dentists, nurses, physiotherapists, pharmacists, veterinary, public health professionals, healthcare managers, bio-medical scientists and other allied health professionals.

WHAT ARE WE OFFERING

Who is it for?	What will we learn?	What is on offer?	Career Opportunities
Multidisciplinary including: Doctor Nurses Pharmacist Other Allied Health Professionals Physiotherapist Social Scientist Public Health Professionals Dentists Veterinary Bio-medical Scientists Health Care Manager	**Skills** • Systematic literature review • (Literature search, Appraisal, Synthesis, Analysis) • Formulate Hypothesis, Research questioners, (focused, answerable) • Apply qualitative & quantitative method/ approach to answer research question/test hypothesis • Plan/design research Project/ study (Population/Setting/Outcome /Exposure) • Develop Research Proposal, considering ethical & governance issues • Able to data, manage and analyze data using a range of quantitative and qualitative statistical tools • Communicate research findings to a range of audience • Able to lead, manage, foster and research team/ Program • Able to create an impact of your research	**Courses:** MS Epi & Bio Standalone Course Extension to PhD	• Academic positions within respective fields • Career advancement within specialties • Industry positions including Pharmaceuticals • Research Managers • Health Policy/ management • PhD

Flow diagram of MS in Epidemiology and Biostatistics program at IPH&SS KMU



Credit Hours: The program is of 36 credit hours, satisfying both the Higher Education (HEC) and Pakistan Medical and Dental Council (PMDC) criteria for recognition.

Total Semesters = 4
Total Contact Session = 6
Total Contact Days = 30 (5 x 6)
Total Program Credit Hours = 30
Credit Hours per semester = 10
Credit Hours per session = 5

Breakdown of the credit hours:

S. #	Courses	Credit Hours
1	Direct Contact/Teaching Session / assignments	30
2	Thesis	06
TOTAL		**36**

Program Information Table: MS Epidemiology and Biostatistics

Information Required	Information Provided
Title of Degree Program	MS Epidemiology and Biostatistics
Definition of Credit Hour	36 credit hours (HEC/PMDC compliant) One credit hour is equal to 16 contact hours
Degree Plan	**Flowchart**: Sequential 4-semester program with core courses, assignments, and thesis.
Curriculum Breakdown	**Table 1**: Semester-wise course distribution (see below).

Curriculum Breakdown
Semester-wise Structure

Semester	Courses	Credit Hours
Semester 1	MS 711: Intro to Epidemiology & Health Statistics MS 712: Applied Health Statistics MS 713: Intro to Regression Analysis	9 (3+3+3)
Semester 2	MS 714: Systematic Reviews & Meta-Analysis MS 715: Research Communication MS 716: Randomized Controlled Trials	9 (3+3+3)
Semester 3	MS 717: Qualitative Health Research MS 718: Measurement in Health MS 719: Advanced Regression MS 720: Survival Analysis	12 (3+3+3+3)
Semester 4	MS 799: Research & Dissertation	6

MS EPI & BIO PROGRAM OVERVIEW

Semester	Course Code	Course	Credit Hours	
			Course	Assignment
Semester 1				
Session 1	MS 711	Introduction to Epidemiology & Health Statistics	3	2+1
Session 2	MS 712	Applied Health Statistics	3	2+1
	MS 713	Introduction to Regression Analysis	3	2+1
Semester 2				
Session 3	MS 714	Systematic Reviews & introduction to meta-analysis	3	2+1
	MS 715	Research Communication and Medical writing	3	2+1
Session 4	MS 716	Randomized Controlled Trials	3	2+1
Semester 3				
Session 5	MS 717	Qualitative Health Research	3	2+1
	MS 718	Measurement in Health & Disease	3	2+1
Session 6	MS 719	Advanced Regression Analysis	3	2+1
	MS 720	Survival Analysis	3	2+1
Semester 4				
	MS 799	Research and Dissertation Writing	**6**	

Credit Hours: The program is of 36 credit hours, satisfying both the Higher Education (HEC) and Pakistan Medical and Dental Council (PMDC) criteria for recognition.

Total Contact Days = 36

Total Semesters = 4

Total Contact Session = 6

Total Program Credit Hours = 36 Credit Hours per semester = 10

Breakdown of the credit hours:

S. #	Courses	Credit Hours
1	Direct Contact/Teaching Session	21
2	Assignments (concept note, proposals, report writings, presentations, critical appraisal of articles)	9
3	Thesis	06
TOTAL		36

Fee Structure: The Fee structure is as under:

PROGRAMS	FEE DETAILS	
	ANNUAL/SEMESTER FEE	KMU Registration Fee (Once)
MS Epi & Bio	Rs. 160,000/- Per Year and	Rs. 3000/-
	Rs. 80,000/- Per semester Thesis Evaluation Fee: Rs. 50,000/-	

Note: Regulatory Body/PM&DC Registration Fee @Rs. 1000/- is applicable as per rules/policy of the regulatory body which may change from time to time.

DISTRIBUTION OF SEATS: The distribution of seats for MS Epidemiology and Biostatistics program are as under:

Total seats:	15 seats
a. Open Merit	09 seats
b. Baluchistan	04 seats
c. FATA	02 seats

Note: If the seats allocated for candidates from Baluchistan and FATA applicants remain vacant, these vacancies will be converted to open merit seats.

Mode of Information Transfer (MIT)

The course uses a variety of modes of information transfer with particular emphasis on problem based learning, hands on training and interactive learning. Following modes of teaching and learning are used:

1. Lectures - Introduce key concepts, principles and knowledge content for each module.
2. Workshops for hands on training and developing critical appraisal skills.
3. Small group tutorials to develop presentations and discussions skills and encourage group working, and peer support
4. Web-based learning and Computer/practical exercises are expected to develop capacity for the optimum use of information and communication technologies in health research and health care;

i. Self-paced Learning - Reading and practical exercises are aimed to help students to work through concepts in more detail, and develop self learning skills.
ii. Manuscripts' writing is aimed at developing analytical skills and writing capacity.
iii. Critical appraisal of published research is expected to develop capacity for critical review of published literature and research proposals.

Web based learning is done through a Virtual Learning Environment (VLE) with support from the course faculty and university I.T staff. Web access to a virtual library is allowed for every student. Other resources and learning materials are made available on the program website.

Program Courses

This program offers the following 9 courses

1. Introduction to health research
2. Introduction to study designs
3. Basic of biostatistics and introduction to data analysis and SPSS
4. Systematic Reviews & introduction to meta-analysis
5. Research Communication and Medical Writing
6. Randomized Controlled Trials
7. Qualitative Health Research
8. Advance Regression Analysis
9. Survival Analysis

MS 711: Introduction to Health Research

Overview

This module aims to develop an understanding of basic concepts in health research and epidemiology. Students will learn about data sources, be able to calculate and interpret basic epidemiological and demographic measures; and to critically appraise the relevant literature. Students will gain knowledge and skills for processing and statistical analysis of health research data and the use of research generated evidence in medical practice and decision-making. The students are expected to develop an understanding of selecting and applying appropriate statistical methods for different research designs and of critically appraising the evidence and translating.

Learning outcomes

At the end of the module, students will be able to:

1. Demonstrate understanding of basic epidemiological and statistical concepts and terminology.
2. Calculate and understand commonly used indices of health and disease, and various measures of association.
3. Select appropriate statistical techniques for different types of research studies and hypothesis testing
4. Know which statistical information should be reported from basic summaries and analysis and the most appropriate way to present this.

Course content

Epidemiology:

- Epidemiological concepts and terminology
- Indices of health and disease
- Data sources and collection
- Measures of association, their calculation and interpretation
- Assessment of cause and effect, confounding and bias
- An introduction to screening and disease prevention
- Chance and the role of statistics

Key texts

- Webb, P. and Bain, C. (2010). *Essential Epidemiology: an introduction for students and health professionals.* 2nd edn. Cambridge University Press.
- Bland, M. (2000). *An introduction to medical statistics.* 3rd edn. Oxford: Oxford University Press. (new edition due in 2015).
- Peacock, J. and Peacock, P. (2010). *Oxford handbook of medical statistics.* Oxford: Oxford University Press.
- Introduction to Epidemiology. CDC USA. https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section4.html
- Center for Evidence Based Medicine, https://www.cebm.ox.ac.uk/resources/ebm-tools/study-designs

MS 712: Introduction to study designs

Overview

This module aims to develop an understanding of basic concepts in epidemiology study designs. Students will learn about study designs and their associated strengths and weaknesses; and to critically appraise the relevant literature. Students should be able to critically appraise different study design. The students are expected to develop an understanding of selecting and applying appropriate statistical methods for different research designs and of critically appraising the evidence and translating.

Learning outcomes

At the end of the module, students will be able to:

1. Students should understand a general definition/concepts of research study designs.
2. Students should know why health research is undertaken, and the audiences that profit from research studies.
3. Students should know the primary characteristics of quantitative research and qualitative research.
4. Students should be able to identify a research problem stated in a study.
5. Students should know the various types of quantitative sampling and which ones present the most rigorous approach to use.
6. Students should understand the link between quantitative research questions and data collection and how research questions are operationalized in practice.
7. Select appropriate study designs for specific research questions, and demonstrate an understanding of their strengths and limitations
8. Should develop a proposal addressing all the aspects of a research study design
9. Students should be familiar with the steps involved in identifying and selecting a good instrument to use in a study.

Course content

Study designs

- Classification of study designs
- Descriptive: Case report, case series, cross sectional.
- Analytical: observational and experimental study designs
- Introduction to nested case control and case cohort study designs

Key texts

- Center for Evidence Based Medicine, https://www.cebm.ox.ac.uk/resources/ebm-tools/study-designs
- Study designs: Part 1 – An overview and classification by Priya Ranganathan and Rakesh Aggarwal. https://www.ncbi.nlm.nih.gov/labs/pmc/articles/PMC6176693/
- Epidemiology Of Study Design by Swapna Munnangi; Sameh W. Boktor. https://www.ncbi.nlm.nih.gov/books/NBK470342/
- Introduction to Epidemiology. CDC USA. https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section4.html

Introduction to Health Research, Epidemiology and Biostatistics

S. No.	Learning Outcomes	Content Areas (Detailed)	Hours	Cognitive Domain	Psychomotor Domain	Assessment Type	Weight (%)
1	Understand and explain the role and importance of health research in public health.	• Definition, scope, and need of health research • Role of health research in policy and practice • Types and classification of health research • Ethics in health research • Research cycle and knowledge translation	10	C1, C2		MCQs	16%
2	Define key statistical and epidemiological terms and understand their application.	• Variables and types of data • Measures of central tendency (mean, median, mode) • Measures of dispersion (range, SD, variance) • Rates, ratios, proportions in epidemiology • Levels of measurement (nominal, ordinal, etc.)	12	C1, C2, C3		MCQs, Problem-solving tasks	18%

3	Describe and differentiate various study designs and evaluate their strengths and limitations.	• Descriptive studies (case reports, case series, cross-sectional) • Analytical studies (case-control, cohort) • Experimental studies (RCTs, quasi-experiments) • Hierarchy of evidence • Bias and confounding in study designs	16	C2, C3, C4		MCQs, Case-based questions	25%
4	Perform basic data entry, transformation, and cleaning using SPSS.	• Introduction to SPSS interface • Variable view and data view • Data entry and labeling • Data transformation and recoding • Data cleaning and validation techniques	14	C3	P2, P3	Hands-on / Practical assessment	22%
5	Estimate sample size for different study designs and apply correct sampling methods.	• Basic sampling techniques (random, stratified, cluster) • Sample size calculation for surveys and comparative studies • Power and effect size concepts • Use of	12	C2, C3, C4	P2, P3	MCQs, Practical exercises	19%

		online tools / software for estimation • Common pitfalls in sampling					

MS 713: Basics of Biostatistics and introduction to data analysis and SPSS

Overview

This module aims to develop an understanding of basic concepts in health statistics. Students will learn about basic biostatistical tests including Chi square, t test, independent t test, paired t test, ANOVA. Students will also learn about correlations and basics of regression. Students will gain knowledge about hypothesis testing, errors, power and sample size estimation. The students are expected to also develop understanding of bias, chance, confounding and effect modification.

Learning outcomes

1. Describe the roles biostatistics serves in the discipline of public health.
2. Describe basic concepts of biostatistical tests
3. Distinguish among the different biostatistical tests and selection of appropriate statistical methods to be used based.
4. Apply common statistical methods for inference.
5. Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.
6. Apply basic informatics techniques with vital statistics and in health research and evaluation.
7. Interpret results of statistical analyses found in health studies.

Course content

- Basic data types, distributions and analyses, estimation of confidence intervals
- Sample size calculation
- Hypothesis testing – statistical tests for demonstrating differences, associations and cause and effect relationships
- Parametric and non-parametric tests for comparisons
- Correlations and regression, ANOVA
- Statistical Power- type I and II errors, calculating power
- Effect size calculation-Odds ratio and Relative Risk

Key texts

- Bland, M. (2000). *An introduction to medical statistics.* 3rd edn. Oxford: Oxford University Press. (new edition due in 2015).
- Peacock, J. and Peacock, P. (2010). *Oxford handbook of medical statistics.* Oxford: Oxford University Press.
- Epidemiology and Biostatistics. 2017. https://www.ncbi.nlm.nih.gov/labs/pmc/articles/PMC7150150/

Table of Specification: Applied Health Statistics and Introduction to regression analysis:

Day	S.No.	Learning Outcomes By the end of this contact session the students of MHR will be able to:	Contents	Learning Domain			Mode of Information Transfer	Venue	Time	Assessment
				Cognitive	Psychomotor	Affective				
Day 1	1	Describe the roles of biostatistics serves in the discipline of public health.	Roles of Biostatistics in Public Health	C1	P1		Lecture	Lecture hall	9:00–11:00 AM	Multiple-choice questions
	2	Describe basic concepts of biostatistical tests.	Descriptive Statistics	C1	P2		Lecture	Lecture hall	11:30–2:00 PM	Multiple-choice questions
	3	Apply common statistical methods for inference.	Hypothesis Testing, Estimation, Errors, Statistical Power	C3	P3		Lecture	Lecture hall		Problem-solving exercises
Day 2	4	Differentiate among statistical tests and selection of appropriate methods.	T-tests (One sample, Independent, Paired)	C4	P3		Interactive Lecture	Lecture hall	9:00–11:00 AM	Practicle using SPSS
	5	Apply descriptive and inferential methodologies for answering research questions.	ANOVA (Repeated Measures, Post Hoc Tests), Chi-square	C3			Practical/Interactive Lecture	Lecture hall	11:30–2:00 PM	Problem-solving exercises

Day 3	6	Analyze relationships between variables using correlation.	Pearson/Spearman Correlation, Scatterplots, and Interpretation	C4			Lecture	Lecture hall	9:00 – 11:00 AM	Practical exercises
	7	Perfom linear regression (simple and multiple).	Simple & Multiple Linear Regression	C4	P3		Practical/Interactive Lecture	Lecture hall	11:30 – 2:00 PM	Problem-solving exercises
	8	Perform logistic regression.	Binary Outcomes, OR, RR, Risk Difference, Logistic Regression	C4	P3		Practical/Interactive Lecture	Lecture hall		Practical exercises
Day 4	9	Develop understanding of bias, chance, confounding, and effect modification.	Bias, Chance, Confounding, and Effect Modification	C3	P2		Lecture	Lecture hall	9:00 – 11:00 AM	Case studies
	10	Understand Sampling techniques. Apply Sampling Methods during their Research.	Sampling Methods, (Probability & Non-Probability Sampling methods)	C4	P2		Practical/Interactive Lecture	Lecture hall	11:30 – 2:00 PM	MCQ's
Day 5	11	Calculate sample size for different epidemiological studies	Sample Size Estimation (Cross-sectional, Cohort, RCT)	C3	P3		Practical Lecture	Lecture hall	9:00 – 11:00 AM	Practical exercises using OpenEpi

	12	Apply non-parametric tests.	Non-Parametric Tests (Sign rank, Wilcoxon, Kruskal-Wallis)	C4	P3		Practical/Interactive Lecture	Lecture hall		Problem-solving exercises
	13	Write and interpret statistical reports.	Writing Statistical Reports	C4	P3		Practical Lecture	Lecture hall	11:30–2:00 PM	Report writing exercise

MS 714: Systematic Reviews and Introduction to Meta Analysis

Overview:

Health policy, clinical and public health practice should be informed by the available evidence. Systematic reviews or evidence syntheses are comprehensive, rigorous and critical summaries of the available research evidence on a specific topic. Relevant studies are systematically identified, their data extracted and synthesized in narrative form and, where appropriate, statistically or thematically pooled, taking care to minimize error and bias. This module provides students with appropriate knowledge and training required for finding, interpreting and conducting systematic reviews.

Learning outcomes

At the conclusion of the module the student will:

1. Understand the importance of systematic reviews and how to find them.
2. Understand the key features of a systematic review.
3. Be able to critically analyse research reviews, identifying possible biases and interpret their findings.
4. Be able to deploy of a range of searching, appraisal and analytical skills and knowledge in order to: specify a review question, plan and conduct a systematic review of randomized controlled trials, observational studies or qualitative studies.
5. Be able to synthesize the results of studies identified in a review, narratively, quantitatively and qualitatively and explore sources of heterogeneity.

Course content

This module provides students with appropriate knowledge and training required for finding, interpreting and conducting systematic reviews. The module sessions are as follows:

- Why systematic reviews are so important and how they have influenced policy and practice. Identifying uncertainties and review questions
- Databases and searching (where to find systematic reviews, where and how to search for studies (practical session)
- Study selection, data extraction, primary study validity
- Narrative synthesis
- Meta-analysis: methods for quantitative data synthesis
- Exploring sources of heterogeneity and checking for publication bias
- Meta-analysis practical session
- Critical appraisal of systematic review reports
- Systematic reviews of qualitative studies and qualitative synthesis

Key texts

- Centre for Reviews and Dissemination. (2009). Systematic Reviews: CRDs guidance for undertaking reviews in health care CRD. University of York. [Online]. Available at: http://www.york.ac.uk/inst/crd/index_guidance.htm
- Higgins, J.P.T. and Green, S. (Eds.). (2011). *Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]*. The Cochrane Collaboration. [Online]. Available at: http://www.cochrane-handbook.org/
- Littell, J.H., Corcoran, J. and Pillai, V.K. (2008). *Systematic Reviews and Meta-Analysis*. 2nd end. Oxford University Press.

Table of Specification for Systematic Reviews and Introduction to Meta Analysis:

S.No	Outcomes	Cognitive	Psychomotor	A	MITs
1.	To Understand the basic concepts and skills of evidence-based health care, including how to formulate a clinical research question, search for evidence; critically appraise evidence for sources of bias, and apply evidence to health care settings	C3			Lecture Small group teaching
2.	To describe in detail different types of research methods and identify the strengths and weaknesses of different study designs.	C3			Lecture Small group teaching
3.	To understand in detail the process involved in conducting a systematic review	C3			Lecture Small group teaching
4.	To develop the skills to conduct and report a systematic review.		P3		Lecture & group teaching
5.	To apply basic and advanced techniques for the analysis of quantitative systematic review data: meta-analysis	C3			Lecture Small group teaching
6.	To analyze new paradigms in systematic reviews and evidence synthesis	C4			Group work
7.	Understand the differences with data extraction of intervention studies	C3			Lecture Group Work

8.	Understand which measures of association and which performance measures are relevant to prognosis and how these can be interpreted	C4			Lecture
9.	Develop basic understanding of the statistical and other concepts underpinning meta-analysis and other methods of pooling data	C3	P3		Lecture Group work
10.	Synthesize the results of studies identified in a review, narratively, quantitatively and qualitatively and explore sources of heterogeneity.		P3		Group Work
11.	To conduct systematic reviews independently		P4		Group Work/Assignment

MS 715: Research Communication and Medical Writing

Overview

This module aims to equip participants with the knowledge and skills to understand the requirements of scientific writing for medical journals, policy documents and conferences. The students will develop skills to communicate clearly and logically the results of research.

Learning Outcomes

The students will be able to develop an

- Understanding of different types of medical writing
- Knowledge of journals. Access to published literature and publication issues
- Understanding of different ways of research dissemination

Skills Development

The students will be able to develop the following skills:

- Write different types of manuscripts
- Prepare oral and poster presentations
- Present research results in different forums
- Critically review published literature

Contents

- Why communicate-verbal & written communications
- Medical writing special features

- Journal publication-types of journals and Journal Indexing, citation & Impact Factor
- Types of publications, original papers, reviews, research reports & theses
- Oral presentations & Poster presentations
- Writing style
- Open access and online publishing
- Scientific misconduct
- Current issues in publishing

- Systematic reviews
- Grey Literature
- Reporting of qualitative research
- Knowledge divide and the 10/90 gap in health research

MHR 716: Randomized Controlled Trials

Overview

Randomized controlled trials (RCTs) form the basis for evidence-based medicine and healthcare. Their use has radically transformed patient care. Many thousands of RCTs are completed each year and their results change clinical practice and inform clinical guidelines. Although the principles of a RCT are relatively straightforward, it is important that they are designed and conducted to the highest standard so we can rely on their results. In this course the core methods are explained and you will be exposed to different RCT designs to enable you to critically appraise published RCTs and to design your own.

Learning outcomes

At the end of the module, students will:

1. Be able to design a randomized controlled trial.
2. Be able to write a funding proposal for a randomized trial.
3. Be able to critically review published randomized trials.

Course content

The module will include covering the following:

- Weaknesses of observational Studies, Regression discontinuity; Random allocation Pragmatic trials. Sources of bias in trials
- Sample size, outcomes
- Ethics Research Governance, writing a trial protocol, statistical aspects of trial design
- Cluster design, factorial trials
- Zelen's method, Preference, Placebo trial designs, n = 1, cross-over, balanced design
- Unequal allocation, trial quality, Increasing response rates to follow-up
- Data management; pilot trials, cohort trial, Trial Recruitment
- Trial cost, Economic evaluation alongside trials, Stepped wedge, publishing trials

Key texts

- Torgerson, D. and Toergerson, C. (2008). *Designing Randomised Trials in Health, Education and the Social Sciences*. Palgrave Macmillan.

Table of Specification: Randomized Control Trial:

Day	Learning Outcomes By the end of this contact session the students of MHR will be able to:	Contents	Learning Domain			Mode of Information Transfer	Venue	Time	Assessment
			Cognitive	Psychomotor	Affective				
Day 1	Understand what clinical trials are and explain their significance in medical research.	1. What are Clinical Trials? 2. Definition and basic principles 3. Difference between clinical trials and observational studies 4. Importance in advancing medical knowledge and improving treatments	C1, C2	P1		Lecture	Lecture hall	9:00–11:00 AM	Multiple-choice questions (MCQs)
	Describe the phases of clinical trials (I-IV) and their purpose.	Phases of clinical trials: Phase I: Safety and Dosage (First-in-human trials) Phase II: Efficacy and Side Effects Phase III: Confirmation of Effectiveness and Monitoring of Side Effects Phase IV: Post-market Surveillance and Long-Term Effects	C1, C2	P2		Lecture	Lecture hall	11:30 AM–3:00 PM	MCQ's
	Understand the phases of clinical trials (I-IV) and their purpose (Why are each of these phases important for patient safety and treatment efficacy)	Case Study Examples: Real-world examples of drugs or treatments that have gone through these phases	C3	P3		Interactive Lecture	Lecture hall		MCQ's

Day 2	1. Define and explain the concept of a Randomized Controlled Trial (RCT) and its importance in clinical research. 2. Identify key components of RCT design, including randomization, control groups, blinding, and allocation methods. 3. Evaluate the strengths and limitations of RCTs as the gold standard for clinical trials.	1. Why RCTs are considered the "gold standard" in clinical research. 2. Brief history and evolution of RCTs in medical research. 3. Key characteristics: Randomization, control group,blinding, allocation concealment and outcome measurement. **Interactive Discussion**: Have students identify scenarios where blinding and randomization would be especially important in clinical trials. 4. Importance of RCTs in Clinical Research: Eliminating bias and confounding factors, establishing causal relationships between intervention and outcomes. **Activity:** Discussion: What is the role of randomization in reducing bias? Discuss examples where randomization might be crucial	C4	P3		Interactive Lecture	Lecture hall	9:00–10:00 AM	MCQ's
	1. Understand the different types of RCTs	1. Parallel group, crossover trials , factorial trial, cluster RCT and when each type is used. **Activity** Present different trial scenarios and ask participants to choose the most appropriate RCT design (e.g., parallel vs. crossover) and justify their choice.	C2			Interactive Lecture	Lecture hall	10:00 - 11:00 AM	MCQs
	1. Use SPIRIT and CONSORT guidelines to appropriately report and assess RCTs 2. Analyze real-world examples of RCTs, critically assessing their design, execution, and conclusions.	1. Reporting of RCTs: SPIRIT and CONSORT Guidelines(overview, key items,role of SPIRIT/CONSORT in ensuring standardize reporting, improve transparency, and ensure the quality of published trials). **Group Activity:** Provide students with an example RCT protocol or published report. Ask them to assess the protocol/report using SPIRIT and CONSORT checklists, identifying areas for improvement in the trial's reporting.	C3			Interactive Lecture	Lecture hall	11:30 –3:00 PM	Problem-solving exercises

Day 3	1. Define internal and external validity and understand their role in clinical trials. 2. Identify factors influencing internal validity and describe methods to control for bias. 3.Discuss the threats to external validity and how generalizability can be improved.	1. Introduction to Validity in Clinical Trials. **Activity**: Quick poll or show of hands: What do you think affects the validity of a clinical trial? (Engage students with a brief discussion on their thoughts before diving into the details.) 2. Internal validity (definition, factors influencing(randomisation, blinding,control group,confounding), threats to Internal Validity:(Selection Bias, Measurement Bias, History, etc) **Activity**:Case Study: Brief discussion on a published clinical trial. Ask participants to identify potential threats to internal validity in the design and suggest strategies to improve it. 3. External validity: Definition, types, factors affecting (sampling, context and setting,intervention delivery). threats to external validyty (Sampling Bia, Interaction Effect etc),	C4			Lecture	Lecture hall	9:00–11:00 AM	MCQs
	1. Evaluate the balance between internal and external validity and its impact on trial design and results.	1. Evaluating Validity in Clinical Trials: **Acitivity:**Evaluating Validity in Clinical Trials 2. Discuss:When is it more important to prioritize internal validity? When is external validity more crucial? **Acitivity:** Interactive Poll: Pose question: “Which trial would you consider more valid? One with a high level of control (internal validity) but limited generalizability, or one with less control but greater generalizability?” Discuss responses with the group, highlighting the reasoning behind the choices.	C4	P3		Practical/Interactive Lecture	Lecture hall	11:30–3:00 PM	Problem-solving exercises

Day 4	1.Define and explain what hybrid trials are and how they differ from traditional randomized controlled trials (RCTs). 2. Identify the key features and components of hybrid trials.	1. Introdction to hybrid trials (definition, purpose and how hybrid trials address gap between clinical research and practical implementation.) **Activity:** Discussion: Ask participants to think of an example in healthcare where a hybrid trial might be appropriate. How would it be different from a traditional clinical trial? 2. Explain Key Features and Design Components of Hybrid Trials	C2	P2		Lecture	Lecture hall	9:00–10:00 AM	MCQs
	1. Understand the different hybrid trial designs (e.g., Type 1, Type 2, and Type 3), and how each is applied to healthcare research.	Explain types of hybrid trials (1,2,3) with examples (overview, design considerations, RCTs within hybrid trials).	C3			Leture	Lecture hall	10:00 - 11:00 AM	MCQSs
	1. Design and plan a hybrid trial, taking into account both clinical effectiveness and implementation aspects. 2. Assess and critically evaluate hybrid trials, using examples of published studies.	**Activity1 : Group Exercise:** In groups, ask students to design a Type 2 hybrid trial for a given healthcare intervention. They must decide how to balance clinical and implementation outcomes and consider the data collection strategies **Acitvity2 :** Case Study Review: Present a hybrid trial example from the literature. Ask participants to critically review the design, methods, and outcomes. What would they change or improve in the trial design?	C4	P2		Practical/Interactive Lecture	Lecture hall	11:30 AM–3:00 PM	Case study
Day 5	1. Design a protocol for a clinical trial (either RCT or hybrid) based on a given research question, demonstrating integration of clinical and implementation elements where applicable. 2. Develop clear and concise study objectives,	1. Hands-On Protocol Development Using SPIRIT Guidelines (facilitator support) 2. Protocol Review and Peer Feedback 3. Group Discussion and Final Refinements	C4	P3		Practical	Lecture hall	9:00AM–3:00 PM	Practical exercise (develop and present RCT protocol)

	methods, and outcomes based on SPIRIT guidelines. 3. Review and critique trial protocols using the SPIRIT checklist, providing constructive feedback to peers.								

MS 717: Qualitative Health Research

Overview

This course will enable you to design and conduct your own qualitative research with confidence. By focusing on the philosophical origins of qualitative research and its appropriateness in answering different types of research question, the course offers a framework in which to assess credibility in qualitative research design, which can then be applied to your work.

There is a particular emphasis on using reflexive understanding as a means of generating theoretically informed and practically grounded qualitative research. This mix of theoretical and practical debate is a particular feature of the course and all aspects of research design, along with a range of qualitative techniques are discussed.

Learning outcomes

By the end of this module, students will be able to:

1. Understand the epistemological and ontological assumptions informing qualitative methodologies.
2. Define the types of research questions that can be appropriately addressed using qualitative methodology.
3. Explore the range of qualitative techniques for collecting material and know the circumstances under which they are likely to be successful.
4. Understand the process of qualitative analysis.
5. Critically evaluate the conduct and presentation of qualitative research.
6. Understand the potential limitations of descriptive accounts, when presenting qualitative research.
7. Discuss the multi-faceted nature of reflexivity and apply such understanding to methodological practices.
8. and more generally: Develop a constructive scepticism towards all types of research design through an understanding of how we produce and construct research findings.

Course content

The module is designed to cover all of the necessary aspects required to design, conduct and critically appraise a qualitative research question. Each teaching week will include both lecture format and small group project work:

Lecture	**Practical Session**
1. What is qualitative research/theoretical underpinnings	Formulating qualitative research questions
2. Design, ethics and PPI	Designing a topic guide
3. Data collection I: Interviews and focus groups	Interview exercise in groups
4. Data collection II: Observation and using documents	Guidance and discussion on summative assessment

5. Data analysis I: Overview of analysis techniques	Preparation for formative assessment
6. Data analysis II: Documentary analysis, writing up qualitative research	Formative assessment: 5 minute presentations on data analysis exercise; feedback from staff/students
7. Credibility in qualitative research	Assessment of a qualitative paper
8.Qualitative research and systematic reviews	
9. Mixed methods	Designing a mixed methods study

Key texts

- Barbour, R. (2008). *Introducing Qualitative Research: A student guide to the craft of doing qualitative research*. London: Sage.
- Green, J. and Thorogood, N. (2009). *Qualitative methods in health research*. London: Sage.
- Hammersley, M. and Atkinson, P. (1995). *Ethnography: Principles in Practice*. London: Routledge.
- Silverman, S. (2013). *Doing Qualitative Research*. 4th edn. London: Sage.

Table of specifications: Qualitative Health Research

No	Learning Outcomes	Contents	Cognitive	Education Theory	Psychomotor	Affective	Mode of Information Transfer
1	Understand the epistemological and ontological assumptions informing qualitative methodologies.	Epistemology & Ontology in Qualitative Research	Knowledge recall & understanding	Constructivism, Pragmatism	None	Attitude towards the researcher's role in the research	Lecture, Reading Material
2	Define the types of research questions that can be appropriately addressed using qualitative methodology.	Research Questions in Qualitative Health Research	Application & critical thinking	Experiential Learning, Andragogy	None	Curiosity towards identifying suitable research questions	Discussion, Interactive Lecture
3	Explore the range of qualitative techniques for collecting material and know the circumstances under which they are likely to be successful.	Qualitative Data Collection Techniques	Comprehension & Application	Andragogy, Constructivism	Practice of data collection techniques	Awareness of ethical issues	Demonstration, Group Work, Case Studies
4	Understand the process of qualitative analysis.	Qualitative Data Analysis Methods	Analysis, Synthesis	Cognitive Load Theory, Transformative Learning	Application of analysis tools	Interest in interpreting qualitative data	Hands-on Exercises, Lecture
5	Critically evaluate the conduct and presentation of qualitative research.	Evaluating Qualitative Research Studies	Evaluation & Critical Thinking	Reflective Practice, Constructivism	None	Reflection on research quality	Group Discussions, Peer Review
6	Understand the potential limitations of descriptive accounts when	Limitations in Qualitative Research	Evaluation & Analysis	Constructivism, Pragmatism	None	Responsibility in presenting findings	Lecture, Case Study Discussion

	presenting qualitative research.						
7	Discuss the multi-faceted nature of reflexivity and apply such understanding to methodological practices.	Reflexivity in Research	Analysis, Synthesis	Transformative Learning, Reflective Practice	Self-assessment through journaling	Personal awareness & empathy in research	Group Reflection, Journal Writing
8	Develop a constructive skepticism towards all types of research design through an understanding of how we produce and construct research findings.	Constructive Skepticism in Research Design	Higher-order thinking & Evaluation	Socratic Method, Problem-Based Learning	None	Intellectual curiosity and critical evaluation	Debate, Critical Analysis

MS 718: Measurement in Health Research and Disease

Overview

The course will concentrate on the use of measurement instruments in health research, the methodology and techniques of designing and evaluating measurement instruments, and the critical appraisal of reports on the properties of measurement instruments. The module will concentrate on the statistical principles behind and application of health measurement instruments in scientific research including the critical appraisal of reports using health measurement instruments.

Learning outcomes

At the end of the module, students will be able to:

1. Understand the nature of measurement error and observer variation and their measurement.
2. Understand the uses and interpretation of different types of measurement and agreement between measurements.
3. Understand the construction of composite measurement scales.

Course content

Sessions will cover:

- Measurement Error
- Observer Variation
- Limits of Agreement
- Agreement using Cohen's Kappa
- Composite Scales and Scores
- Diagnostic Tests
- Validity of measurement instruments
- Reference intervals

MS 719: Advanced Regression Analysis

Overview

Linear models, as their name implies, relates an outcome to a set of predictors of interest using linear assumptions. Regression models, a subset of linear models, are the most important statistical analysis tool in a data scientist's toolkit. This course covers regression analysis, least squares and inference using regression models. Special cases of the regression model, ANOVA and ANCOVA will be covered as well. Analysis of residuals and variability will be investigated. The course will cover modern thinking on model selection and novel uses of regression models including scatterplot smoothing.

Course Content:

1. Introduction to Regression
2. Least Squares and Linear Regression
3. Linear Regression & Multivariable Regression
4. Multivariable Regression, Residuals, & Diagnostics
5. Logistic Regression and Poisson Regression

MS 720: Survival Analysis

Overview

This module aims to facilitate learning for students who engage with research data or with the research process, developing skills in the critical analysis of research. The learning content addresses engagement with existing research produced by others, and application of such findings to practice.

The module will also prepare you for the conduct of the early stages of the research process, so that you will be able to use research, informed by insights gained through your own experience of starting to do research. The module assumes no detailed prior knowledge of the research process, but does require you to come with an open and enquiring mind.

Contents:

1. Preliminaries
2. censored data
3. survival functions
4. hazard functions
5. product limit estimates

6. survival data analysis
7. comparison of 2 treatment and 3 diets
8. 2 survival functions

MS 799: Research and thesis writing

Students will have to develop a proposal, then take the necessary approvals, conduct research and write a thesis.

5. Students Evaluation:

The students are evaluated during each course on the basis of:

1. Internal Assessment
2. Course Assignments evaluation
3. Final Examination
4. Research Thesis Evaluation

Examination and Methods of Assessment

Internal Assessment

Internal assessment will include class participation, interactive discussions, presentations and group work during the contact sessions. This assessment will be weighted towards 10% of the total grade for the module.

Assignments

There are a minimum of 12 assignments of 9 courses (One to two assignment per 5 days course). The assignments will be given after the contact session of each module. After attending the contact sessions, the students will be provided three months time for the approval of assignment in each course; failing may lead to repetition of contact session. The assignments of each course will be submitted on MOODLE. It will be assessed and marked on MOODLE. It will be graded for 40% of the total grade for the course.
Note: Assignments will only be given to students who will attend the contact session of the course.

Final Examination:

The material covered on the examinations will come from the lecture notes, problem sets and required reading. For the Final Examination the course supervisors will prepare two question papers in the University approved format and submit these to the Course Director of the Institute in a sealed envelope. The Course Director will forward these papers to the Examination Section. The Final Exam question paper will be issued by the Exam Section. The final exam will be

weighted towards 50% of the total grade for the course. The format of paper for the final exam will include multiple choice questions, short answer questions

If a student fails a periodic assessment (assignments, proposal writing etc), the course supervisor will advise and organize help for him to improve his/her grade on resubmission of the assignment etc. If a student fails in the final exam, the student needs to appear in the next final examination.

MS 799: Research Thesis Evaluation

The Program requires all students to develop a research protocol, collect and analyze data and write a thesis. This provides the students an opportunity to gain first-hand experience of conducting a complete research study. Thesis committees supervise the students' research projects. Each thesis committee comprises of a thesis supervisor and at least one other faculty member from within the Program or within the University. In order to fund their MS thesis research, students are encouraged apply to the University or to national and international funding agencies.

ASSESSMENT

S#	Title of Courses	Assessment (Weightage)			
		Internal Assessment (%)	Assignments (%)	Final Exam (%)	Total (%)
1	Introduction to health research	10	40	50	100
2	Introduction to study designs	10	40	50	100
3	Basic of biostatistics Introduction to data analysis and SPSS	10	40	50	100
4	Systematic Reviews & introduction to meta-analysis	10	40	50	100
5	Research Communication and Medical writing	10	40	50	100
6	Randomized Controlled Trials	10	40	50	100
7	Qualitative Health Research	10	40	50	100
8	Regression analysis	10	40	50	100
9	Survival analysis	10	40	50	100
11	Research and Dissertation Writing	Thesis Review and Viva			

5.2 Grading

Grading of students is done through letter grades as defined in Table 1. Grades are assigned by the course supervisor on the basis of the assessment scores of the students.. The course supervisor signs and submits the grades to the course coordinator, who forwards the same to the Director of the MHR Course. The Director forwards them to the Controller of Examination at the University.

The numerical scoring in the continuous assessment, and final exam are converted to a letter grade and grade points as follows:

Table 1: Grade Points

Numerical Score (in percent)	Letter Grade	Grade Points
>= 85	A	4.0
72 - 84	B	3.0
60 – 71	C	2.0
< 60	F	0.0
Incomplete	I	NA
Withdrawn	W	NA

Students receiving an F grade in any course will have to repeat the course whenever it is offered again. A student obtaining a D grade in the course may also repeat that course, if necessary to improve his/her cumulative grade point average (CGPA). In case of repeated courses, all grades earned by the student appear in the Transcript/Detailed Mark Certificate (DMC); however, only the latest grade is counted for calculating the CGPA. If a large number of students fail a course, that course may be offered again during the Summer

Grade I (Incomplete) is awarded to a student only if he/she has missed the Final Examination, Project Report Submission, Thesis Defense, etc., due to genuine reason, but has completed all the other work of the course successfully. The award of grade I doesn't cover a student's irresponsible attitude, willful absence, or bad performance in class.

Grade I needs to be converted to an appropriate letter grade by the end of the next semester, otherwise it would stay permanent and the student will have to repeat the course. The course instructor concerned should specify the conditions for conversion of grade, in the Grade Conversion Form (FORM-GCF) to be supplied by the Controller of Exams at the University, and explain the same to the student while assigning grade I.

The Cumulative Grade Point Average (CGPA) is calculated for all courses taken to date in a similar manner. In case a course is repeated, all grades will be reported on the transcript; however, only the latest grade will be used to calculate the GPA.

The written thesis and the thesis defense is graded as pass or fail. The pass or fail grade is not counted towards the calculation of the GPA or the CGPA.

Students at the Masters level are expected to maintain a CGPA of 2.5 during the course of study.

A student who obtains a GPA of less than 2.5 for two consecutive modules will be issued a warning letter by the Director.

An example of the GPA calculation for a generic semester in the MHR program is given in Table 2.

Table 2: Example of GPA calculation for a semester

Course Code **A**	**Credit Hours** **B**	**Numerical Score** **C**	**Letter Grade** **D**	**Grade Points** **E**	**Quality Points** **B x E**
410	3	87	A	4.0	**12**
421	3	76	B	3.0	**9**

430	3	70	C	2.0	**6**
440	3	84	B	3.0	**9**
Total	**12**				**36**
GPA = 36 / 12 = 3.0					

Academic Quality:

1. A student must have 80% of the attendance in each contact session.

2. A student who has missed more than two days in the contact session will repeat a contact session.
3. A student will attempt one extra assignment in addition to three assignments, if missed one day of contact session. (Total assignments to be attempted = Four)
4. A student will attempt two extra assignments in addition to three assignments, if missed two days of contact session. (Total assignments to be attempted = Five)

l. Contact session freezing policy and re-joining MS course

1. Attending 1st contact session is mandatory. No freezing/dropping shall be allowed in the first contact session. The dropped/freezed contact session shall be counted towards the period required for completing the course work.
2. A student can freeze a contact session, after passing his/her previous modules successfully with all dues clear except S # 1. Moreover, he/she will inform the institute in written at least a week before starting of contact session.
3. A student will re-join the course from the freezed contact session of module with next batch.

Repetition of modules/contact session

1. A student who has not submitted/completed assignments of any module will repeat the contact session along with assignments and paper.
2. A student who failed a module will repeat a contact session of the module he/she failed along with assignments and paper.
3. A student, who is found absent from the contact session for more than three days will repeat a contact session.
4. Fee @ 50% of contact session fee (As per KMU policy) will be imposed on repeating of module.

Re-appear policy

1. If the assignments of student are approved and he/she missed a paper due to any reason, he/she will be allowed to attempt it whenever it will conduct during the following year/years with the next batch. There shall be no Supplementary / Special Examination; if a student fails in a course, he/she is required to repeat it.
2. A fee will be charged on paper attempt (As per KMU policy).

Promotion to Next Contact session

Requirement for promotion to next session shall be as follow;
1. A student who has submitted/completed assignments of the module will be promoted to next contact session.
2. A student, who has not submitted the assignments of 1st Module in due course of time after attending the 1st contact session, will be considered drop from the program.

Maximum time required for completion of two years program

1. Maximum Four Years duration (from the date of admission) shall be allowed for a student to qualify.
2. A student if failed to complete the program in the maximum four years duration, the Academic Council may, on the written request of the student duly recommended by head of the institution, further extend up to one year with imposition of a fine which shall be doubled of the prescribed fee for the enrolment of the relevant degree program's semester.
3. The institute will decide the deadlines for assignments and final submission of thesis.
4. If a student failed to submit the thesis in due course of time, he/she will write application to his/her supervisor for further extension. The written request will be duly recommended by the supervisor. A fine (As per KMU policy) may be imposed on a student.

Note:
1. The students will deposit their fee yearly i.e for three contact sessions collectively.
2. Fee deposition in instalments is not allowed as per KMU Policy.
3. The fee can be increased any time as per KMU policy.

Fee Refund Policy (for programs based on Contact Sessions)
1. Full (100 %) Fee will be refund up to 03 days of convene of 1st Contact Session.
2. Half (50 %) Fee will be refund from 04 to 07 days of convene 1st Contact Session.
3. No Fee (0 %) will be refund from 8th Day of 1st Contact Session.

ELIGIBILITY CRITERA
The following are required for admission into the MS Epi & Bio Program;

MBBS/BDS, MD or equivalent qualification recognized by PMDC, MSc Nursing (Recognised by PNC), DPT/MSc Physiotherapy, MSc Paramedics, Pharm-D, MSc Psychology, MSc Prosthetic & Orthotic, Master of Veterinary Science

Computer literacy in MS Office and Internet
Interview conducted for eligible candidates.

Application Procedure

The available Admission form on the university website www.kmu.edu.pk should be filled and submitted. The course organizer will finally select the candidates after reviewing the application forms.

Teaching Faculty

Core Faculty:

Dr. Khalid Rehman
Post Doc, PhD Public Health
Professor, Public Health, Khyber Medical University.

Dr. Zohaib Khan
Post Doc, PhD in Public Health (Epidemiology of Oral Cancer in Pakistan)
Director ORIC, Khyber Medical University, Peshawar

Dr. Sheraz Fazid
MPH, (PhD Public Health)
Assistant Professor, Epidemiology and Biostatistics, Khyber Medical University.

Dr Farhad Ali
MPH, MS Epi & Bio, (PhD Public Health)
Assistant Professor, Epidemiology and Biostatistics, Khyber Medical University.

Dr Nauman Arif
MPH, MS Epi & Bio (PhD Public Health)
Lecturer, Epidemiology and Biostatistics, Khyber Medical University.

Dr. Ayesha Imtiaz
MPH, (PhD Public Health)
Assistant Professor, Public Health, Khyber Medical University.

Dr. Zeeshan Kibria,
MPH, (PhD Public Health)
Deputy Director ORIC, Khyber Medical University, Peshawar.