

**Baba Farid University of Health Sciences, Faridkot (Pb)**

**&**

**Punjab Technical University, Jalandhar (Pb)**

## **Ordinances and Syllabus**

**Masters in Public Health and Engineering**

**(MPHE)**

**(Degree Programme)**

**(Joint Venture Degree Course)**



## **The genesis of joint venture courses**

**The genesis of collaborative studies between Baba Farid University of Health Sciences, Faridkot and Punjab Technical University, Jalandhar goes back to a meeting held at government level wherein honourable Vice- Chancellors of both the Universities were present. Later after long discussions between the faculty members of both the Universities and higher authorities of the state government, a Memorandum of Understanding (MoU) was signed between the two universities on 08-04-2011 at Faridkot to start joint courses. These courses were aimed to be of multidisciplinary subject nature, integrating professional engineering activities with basic medical knowledge of functioning of the human body. These courses will be aimed and so designed so as to improve the hospital management.**

**With the aim and objective of improving the hospital management, a two year degree " Masters in Public Health and Engineering" with six months unpaid internship has been designed by the joint board of studies (BFUHS and PTU). The degree course aims to impart education to prepare specialists to deal with administration and setting up and running hospitals to meet the requirements of the present times i.e efficient management and maintenance of the hospitals in the country.**

**Ordinances**  
**Masters in Public Health and Engineering**  
**(MPHE)**

**1. Duration of the course:**

Duration of the course will be two years followed by unpaid six months internship in a recognized teaching medical institution. The nature of the course will be full-time residential posting.

**2. Admission criteria and qualification:**

The admission to the course will be based on admission criteria and qualifications prescribed in the notification to be issued by the university making admission to the course (laid down by the joint board of studies namely MBBS/BDS).

**NOTE:** There are 25 seats for admission in MPHE course

**Selection criterion:**

-Selection criteria for admission will be based on the percentage of marks obtained in the qualifying degree examination.

-In the event of percentage of marks being equal, the elder candidate (date of birth) will be selected.

**3. Medium of Instructions:**

The medium of instruction during the course and examinations shall be English.

**4. Training Schedule for the course**

4.1 The course shall have 50:50 Engineering and Medical curriculum.

4.2 The course shall be of two years duration with first and third semesters of study at GGS Medical College, Faridkot and second and fourth semesters of study at PTU GZS Campus, Bathinda followed by six months unpaid internship.

4.3 The Medical component of the course shall be conducted at GGS Medical College, Faridkot, which will be the study centre for the course.

4.4 The Engineering component of the course shall be conducted at PTU, GZS Campus, Bathinda, which will be the study centre for the course .

4.5 The candidate will be required to work on a research project for dissertation. The candidate will submit the plan for dissertation in the second semester and after approval of the same by the joint board of studies (BFUHS and PTU), start working on it under the care of medical/engineering

teachers and on completion of the same he/she submits the dissertation in the fourth semester for evaluation. The candidate is expected to make a presentation ( internal examination worth 200 marks) on the same before the joint board of studies (BFUHS and PTU) in the fourth semester before the semester examination.

- 4.6 The Masters Degree offered to the candidates on the completion of the course shall be signed by designated authorities of both the universities.
- 4.7 Reservation of seats shall be as per Punjab Govt. rules.

## 5. Examination Schedule and Examination

- 5.1 MPHE course is a semester based course so the examinations shall be held on such dates as may be decided by the **Dean, BFUHS** for the 1st and 3rd semesters and **Dean PTU** for the 2nd and 4th semesters on the recommendation of the joint board of studies. They will also function as **Exams Officers** for the course. The offices of these authorities will also function as examination offices.
- 5.2 In case a candidate fails to qualify in one or more subjects, he/she will appear in the supplementary examination alongwith others in the next end semester examination for that subject/s.
- 5.3 The Exams Officer will direct the students/candidates to deposit their examination forms for the end semester examination alongwith the examination fee of Rs. 750.00 with late fee, if any, at the rate of Rs. 50.00 per day.
- 5.4 Office of Exams Officer will draft date sheet and circulate it to students after receipt of the examination forms and roll numbers will be issued thereafter.  
  
It will be the responsibility of the candidate to collect information regarding examination schedule, roll number slip and result etc.
- 5.5 No candidate will be allowed to appear in the examination without the roll number slips.
- 5.6 The semester examination including evaluation and declaration of the semester examination result should be over before the end of the sixth month of the semester.
- 5.7 The Internal assessment should be submitted to the office of Exams Officer at least two weeks before the commencement of the semester examination. The internal assessment will be prepared by the concerned faculty members teaching the students of the joint course.

Internal assessment is aimed to assess values, skills and knowledge imbibed by students. It should be based on continuous evaluation of the student done through class test/mid semester tests, quizzes, seminar, home assignment and class work, laboratory work, workshop practice etc as the case may be. Record of each student shall be maintained by the concerned teacher in each department, which should be made available for inspection by the student concerned as well as university authorities.

- 5.8 The candidate for the examination should secure 40% marks in internal assessment and external examination separately for each subject to pass that subject.
- 5.9 The candidate should have attended atleast 75% of the classes/lectures. 10% relaxation may be given by the office of Dean on grounds of candidates illness subject to submission of certificate of illness issued by a hospital.
- The candidate should have remained on the rolls of the institution.
- 5.10 The candidate should be of good character.
- 5.11 No candidate shall be allowed to take the semester examination unless one has paid all the dues including university course and examination fee before the last date of submission of examination forms.
- 5.12 The external marks (100) for the theory paper are meant for external evaluation by the concerned university through the office of Exams Officer.
- 5.13 In case any student appears in the examination by default, who in fact has been detained from appearing in the examination by the institution, his/her results shall be treated as null and void.
- 5.14 The first semester examination for MPHE course shall be in the following subjects and candidate shall be required to pass in all the subjects:

### **Medical Semester 1**

Sr. No.	Subject Code	Subject Name	Teaching Load			Internal Marks	External Marks	Total Marks
			L	T	P			
1	MPHE-101	Concept of Health, disease and Epidemiology	3	1	-	50	100	150
2	MPHE-102	Epidemiology of communicable and non-communicable diseases	3	1	-	50	100	150
3	MPHE-103	Nutrition and M.C.H.	3	1	-	50	100	150
Total Marks								450

- i) Each theory paper shall be of three hours duration.
- ii) A candidate who fails in one or more subjects in the first semester examination will be promoted to second semester but will have to clear/pass the subject/s in which he/she failed in the next supplementary end semester examination.
- iii) A candidate who will absent himself/herself from the examination will be deemed to have failed in that subject in the examination.
- iv) A candidates securing 75% or above marks in aggregate of all subjects of the semester shall be declared to have passed with Distinction in that course provided he/she has passed the examination in the first attempt.
- v) At the end of semester examination, the candidate is to be supplied with a details marks certificate (DMC) indicating the marks obtained in each course or subject passed.

5.15 The second semester examination for MPHE course shall be in the following subjects and the candidate shall be required to pass in all the subjects:

### **Engineering Semester 2**

Sr. No.	Subject Code	Subject Name	Teaching Load			Internal Marks	External Marks	Total Marks
			L	T	P			
1	MPHE-201	Planning and Designing of Hospital	3	1	-	50	100	150
2	MPHE-202	Water Supply and Sanitation Systems	3	1	-	50	100	150
3	MPHE-203	Water Pollution and Waste Water Treatment	3	1	-	50	100	150
Total Marks								450

- i) Each theory paper shall be of three hours duration.
- ii) A candidate who fails in one or more subjects in the second semester examination will be promoted to third semester but will have to clear/pass the subject/s in which he/she failed in the next supplementary end semester examination.
- iii) A candidate who will absent himself/herself from the examination will be deemed to have failed in that subject in the examination.

- iv) A candidates securing 75% or above marks in aggregate of all subjects of the semester shall be declared to have passed with Distinction in that course provided he/she has passed the examination in the first attempt.
- v) At the end of semester examination, the candidate is to be supplied with a details marks certificate (DMC) indicating the marks obtained in each course or subject passed.

5.16 The third semester examination for MPHE course shall be in the following subjects and the candidate shall be required to pass in all the subjects:

### **Medical Semester 3**

Sr. No.	Subject Code	Subject Name	Teaching Load			Internal Marks	External Marks	Total Marks
			L	T	P			
1	MPHE-301	Environment and Health	3	1	-	50	100	150
2	MPHE-302	Public Health	3	1	-	50	100	150
3	MPHE-303	Health Informatics and Biostatistics	3	1	-	50	100	150
Total Marks								450

- i) Each theory paper shall be of three hours duration.
- ii) A candidate who fails in one or more subjects in the third semester examination will be promoted to second semester but will have to clear/pass the subject/s in which he/she failed in the next supplementary end semester examination.
- iii) A candidate who will absent himself/herself form the examination will be deemed to have failed in that subject in the examination.
- iv) A candidates securing 75% or above marks in aggregate of all subjects of the semester shall be declared to have passed with Distinction in that course provided he/she has passed the examination in the first attempt.
- v) At the end of semester examination, the candidate is to be supplied with a details marks certificate (DMC) indicating the marks obtained in each course or subject passed.

5.17 The fourth semester examination for MPHE course shall be in the following subjects and the candidate shall be required to pass in all the subjects:

### **Engineering Semester 4**

Sr. No.	Subject Code	Subject Name	Teaching Load			Internal Marks	External Marks	Total Marks
			L	T	P			
1	MPHE-401	Solid Industrial and Hazardous waste management.	3	1	-	50	100	150
2	MPHE-402	Air Pollution monitoring and control	3	1	-	50	100	150
3	MPHE-403	Hospital facilities management	3	1	-	50	100	150
Total Marks								450

- i) Each theory paper shall be of three hours duration.
- ii) A candidate who fails in one or more subjects in the fourth semester examination will have to clear/pass the subject/s in which he/she failed in the next supplementary end semester examination.
- iii) A candidate who will absent himself/herself from the examination will be deemed to have failed in that subject in the examination.
- iv) A candidates securing 75% or above marks in aggregate of all subjects of the semester shall be declared to have passed with Distinction in that course provided he/she has passed the examination in the first attempt.
- v) At the end of semester examination, the candidate is to be supplied with a details marks certificate (DMC) indicating the marks obtained in each course or subject passed.



- 5.18 **Dissertation work:** On approval of the plan of dissertation, a candidate will undertake the dissertation work assigned to him/her by the joint board of studies.

Dissertation Work	Content of Project Work	Presentation with Viva	Total Marks
	100	100	200

Note: The dissertation work will be evaluated internally by the joint board of studies and a candidate is required to obtain 40% marks to pass it.

- 5.19 **Internship:** On completion and passing the semester examinations, a candidate will undergo a six months unpaid internship training.

75% attendance is compulsory during internship.

**6. Grace Marks:**

Grace marks up to a maximum of five marks may be awarded at the discretion of the university to a student who has failed only in one subject but has passed in all other subjects in one semester.

**7. Paper setting:**

The theory papers for the subjects of study for the course will be got set by the Exams Officer.

**8. Evaluation of Answer books:**

The theory answer books will be got evaluated by putting the fictitious roll numbers.

**Rechecking/ Re-totaling of Answer books:**

There will be no rechecking of the answer sheets. However, re-totaling of the marks on payment of requisite fee of Rs 1500=00 is allowed if application alongwith the requisite fee is moved within ten days of declaration/publication of the result of the candidate.

The practice of re-totaling will involve to find out:

- a) Whether all answers and/or part thereof are evaluated ?  
In case any answer or part thereof is found to be left unevaluated, the office shall get it evaluated within the stipulated period.
- b) Whether the marks awarded on each answer are correctly posted on the cover page of the answer book ?  
In case of any discrepancy, correction will be effected.
- c) Whether the totaling of the marks posted on the cover page is correct ?  
In case of any discrepancy, correction will be effected.

This exercise will be completed within one week of receipt of the application from the candidate in his/her own handwriting along with the requisite fee for the same.

**9. Declaration of Result:**

The office of Exams Officer shall declare and publish the result after examination. The candidate shall be issued a detail marks certificate.

**10. Duration for the completion of the MPHE course requirements (maximum period)**

A total of 4 years from date of admission shall be given to a student of MPHE course to pass all subjects and to fulfill all other requirements for the completion of

degree course failing which the candidature of the student shall stand cancelled and no degree shall be awarded.

**11. Powers of the Vice-Chancellor :**

Notwithstanding anything contained in these regulations, the respective Vice-Chancellor shall be competent to allow any relaxation in consultation with board of studies. The Vice-Chancellor's decision shall be final.

**12. Award of Degree:**

On successfully passing the semester examinations, dissertation work and satisfactory completion of unpaid internship, the candidate shall be awarded the degree **Masters in Public Health and Engineering (MPHE)**.

**Masters in Public Health and Engineering  
(MPHE)**

**The uniform format of the theory question paper will be the same for all the subjects of  
all four semesters of the degree course**

- NOTE:**
- The theory question paper shall be covering the entire syllabus.
  - The time duration of the paper will be **3 Hours**.
  - It will carry a total **100 marks**.
  
  - There shall be **12** questions covering the entire syllabus uniformly out of which a candidate will attempt only **10** questions.
  - Each question will carry **10** marks

**Syllabus****First Semester at GGS Medical College, Faridkot****Masters in Public Health and Engineering  
(MPHE)****MPHE - 101****Concept of Health, Disease and Epidemiology**

1.Dimension of Health
2. Determinants of Health
3.Indicators of quality of life
4.Measurements of health status and indicator
5.National health policy
6 Aims of epidemiology and its approach
7. Measurement of morbidity and mortality
8.Epidemiological methods
9.Uses of epidemiology
10. Prevention, control and investigation of an epidemic

**Syllabus****First Semester at GGS Medical College, Faridkot****Masters in Public Health and Engineering  
(MPHE)****MPHE - 102****Epidemiology of Communicable and Non-communicable Diseases**

1. Respiratory diseases
2. Intestinal infections
3. Arthropod-borne diseases
4. Zoonoses
5. Surface infections
6 CV diseases, CAD
7. Hypertension, stroke
8. RHD, diabetes,
9. Cancer, blindness
10. Accidents, obesity

**Syllabus****First Semester at GGS Medical College, Faridkot****Masters in Public Health and Engineering  
(MPHE)****MPHE - 103****Nutrition and M.C.H.**

1. Classification of foods
2. Balanced diet, dietary goals, nutritional requirements.
3. Nutritional problems
4. Assessment of nutritional status
5. Programmes related to nutrition, food hygiene.
6 National nutritional policy
7. MCH services
8. CSSM, RCH-1&II,
9. IMNCI, School health services
10. Role of NGO, National population policy

**Syllabus**

**Second Semester at PTU GZS Campus, Bathinda**

**Masters in Public Health and Engineering  
(MPHE)**

**MPHE - 201**

**Planning and Designing of Hospital**

Types of Hospital organizations, statutory requirements for planning.

Layout, zoning and phasing of activities for various departments in the Hospital, Circulation and movements in the hospital, Patient staff and visitors, Supply of CSSD, Food and Laundry.

New Trends in Hospital Design, Intelligent Building Management System, Impact of new technology, Management information system.

Landscaping, Elements of landscape and Materials, Environmental consideration in landscape planning.

Planning for engineering services and impact of regulations on services design, Water supply, Electricity, Drainage, Sewage disposal, Gas, Acoustical.

Disaster management for buildings classification of Disaster, Disaster Management & mitigation strategy.

Fire fighting system, building safety & security system.



**Syllabus****Second Semester at PTU GZS Campus, Bathinda****Masters in Public Health and Engineering  
(MPHE)****MPHE - 202****Water Supply and Sanitation Systems**

Water Supply: Introduction, quantity of water, sources of water supply, pumps for water supply project, quality of water, sedimentation tanks, coagulation of water, filtration of water, disinfection of water, water softening, methods of water treatment, conveyance of water, distribution system of water, pipe appurtenances, water pollution control and water management, radioactivity and water supplies. Hot & cold Water supply, layout plan for hospital showing various fittings and installation, storage of water.

Sanitation: Introduction, collection and conveyance of refuse, quantity of sewage, construction of sewers, design of sewer, sewer appurtenances, sanitary engineering – pumps, house drainage, quality of sewage, natural methods of sewage disposal, primary treatment of sewage, filtration of sewage, activated sludge process, sludge disposal, methods of sewage treatment, Objectives and methods of storm water disposal, rain water harvesting.

**Syllabus****Second Semester at PTU GZS Campus, Bathinda****Masters in Public Health and Engineering  
(MPHE)****MPHE - 203****Water Pollution and Waste Water Treatment**

Water pollution: Characterization of Effluents, Effluents Standards. Physical, Chemical and Biological Characteristics of Waste Water, BOD, COD and TOD- Their estimation and correlation: BOD progression curve and kinetics, Effect of Temperature on BOD; Nitrification and De-Nitrification and their kinetics.

Hydrogeology and Groundwater Pollution Properties of major water pollutants, and impacts of wastewater on aquatic ecosystems, such as saprobity, eutrophy, pathogenicity, toxicity, etc. Industrial Water Treatment, Municipal Wastewater Treatment.

Waste Water treatment Systems: Waste Water Collection Systems, Urban Wet Weather Flow, Physic-chemical Process, Activated Sludge and other Aerobic Suspended culture Processes, Biological Fixed filter system, Anaerobic processing, Natural treatment and On-site processes, Disinfections and Anti-microbial process, Bio-solids and sludge management, Gaseous emissions from waste water facilities, water reclamation and reuse; modeling, Instrumentation, Automation and optimisation of waste water treatment facilities.

Fate and effects of Pollutants: Mixing and transport, Aquatic sediments, Ground water quality , Non-Point sources, fate of environmental pollutants. Substratum associated Microbiotic. Effects of pollution on fresh water organisms. Effects of Pollution on Marine Organisms. Thermal effect. Health Effects Associated with wastewater treatment, disposal and re-use.

**Syllabus****Third Semester at GGS Medical College, Faridkot****Masters in Public Health and Engineering  
(MPHE)****MPHE - 301****Environment and Health**

Environmental Health
1. Save Water
2. Purification of Water
3. Hardness of Water
4. Water Conservation
5. Air Pollution
6. Ventilation & Light
7. Noise Pollution
8. Meteorological Environment
9. Housing
10. Waste Disposal & excreta Disposal
11. Medical entomology
12. Programmes related to environment

**Syllabus****Third Semester at GGS Medical College, Faridkot****Masters in Public Health and Engineering  
(MPHE)****MPHE - 302  
Public Health**

Public Health
1. History of Public Health in India
2. Health Planning in planning cycle
3. Health Management
4. Modern Management Technics
5. National Health Policy
6. Health Planning in India, 5 year Plan
7. Health system in India, Evaluation
8. Primary health care its principles & elements
9. Health for all by 2000, MDG
10. Health care delivery system & IPHS standards
11. Health insurance & voluntary health agencies
12. National rural health mission & hospital statistic

**Syllabus**

**Third Semester at GGS Medical College, Faridkot**

**Masters in Public Health and Engineering  
(MPHE)**

**MPHE - 303**

**Health Informatics and Biostatistics**

MPHE-303

**Health Informatics**

- 01 History: Introduction to Computer; Computer classifications (According to generation, Size and use).
- 02 Hardware: Introduction to hardware, CPU, Motherboard, various ports and slots available with motherboard, Input devices, Output devices Storage Devices and Memory; Power devices like UPS.
- 03 Networking: Introduction to networking, Classification of networking like LAN, WAN, MAN, Hardware of networking-modem, Hub, Switches, Cables etc.
- 04 Computer Package: MS Word, MS Power Point, MS Excel
- 05 Internet: History; Internet Browser, WWW; Email; Search Engines; Blogging; Social Networking.
- 06 Information Literacy and Informatics:
- What is Data, Information and Knowledge? Information Literacy Concept and Importance; Information Organization/ search strategies; life long learning; Information Management; Life Cycle of Information

**Course for MPHE – 303 (Bio Statistic)**

Health Informatics & Bio Statistic	Hours
1. Introduction, Type of data, Basic terminology used in Bio Static	2
2. Measures of central tendency, standard deviation & coefficient of variation	1
3. Sample & method of sampling	2
4. Normal distribution & normal curve	2
5. Null Hypothesis, Type I Type II errors, Level of significance	2
6. Test of significance, T Test ANOVA, non Parametric test	2
7. Correlation & Regression	1
8. Different sources of Health Information	3

**Syllabus****Fourth Semester at PTU GZS Campus, Bathinda****Masters in Public Health and Engineering  
(MPHE)****MPHE - 401****Solid Industrial and Hazardous Waste Management**

Ecology and Environment, Principals of ecology and of ecosystem process, description, and measurement, with emphasis on ecosystem health assessment, sources of solid Wastes.

Urban solid Waste: Nature & Characterization, Disposal recycling and Threats. Biomedical waste, Hospital waste Disposal, solid waste Processing, Thermal Volume Reduction, Manual Component Separation, Lands Filling with solid waste, Design and Operation of Landfills.

Industrial Wastes: Agricultural Wastes, Automotive wastes, Wastes from Chemical and Allied industries, Fermentation Industries, Food Processing Wastes, Waste from electronics and metal Finishing and processing , Minerals and mine Drainage, Waste From Petro-Chemical industries, Power Production wastes, Pulp and paper effluent Management, Waste from Pesticides and herbicides industries.

Hazardous wastes: Assessment, hazardous waste minimization. Regulations and regulatory trends and treatment or remediation alternatives. Solid waste management options, including recycling in reference to industrial and special wastes. Management and minimisation of treatment technologies. Storage, Disposal, Remediation. Radio-Active Wastes.

**Syllabus****Fourth Semester at PTU GZS Campus, Bathinda****Masters in Public Health and Engineering  
(MPHE)****MPHE – 402****Air Pollution Monitoring and Control**

Air Pollution; Types and strategies for waste minimization, Pollution prevention the concepts of air pollution control design, the regulatory and environmental concerns which drive the air pollution, control industry.

Air Pollution: Micro Metrology and dispersion of pollutants in environment, Fate of Pollutants. Air pollution control technologies: Centrifugal collectors, Electrostatic Precipitators, Bag filters and wet Scrubbers. Design and efficiencies, combustion generated pollution, Vehicle emission control. Case Studies.

Measurement and monitoring of Pollutants: Detection and occurrence of sulphur dioxide and oxides of nitrogen; Analysis and measurement of gaseous pollutants, particulate pollutants, odors, visibility and acidic deposition. Ambient and stack monitoring, stack emission monitoring, control of auto exhaust emission; IR/UV spectrophotometer, photometry, dispersion and scattering methods, gas chromatography, mass spectrometry, spectroscopy, Thermal analysis techniques based on physical property mass (Thermogravimetry, Evolved gas detection, Evolved gas analysis); temperature (Differential thermal analysis); enthalpy (Differential scanning calorimetry); Carbon Management, global carbon cycle, carbon offsetting and emissions trading.



**Syllabus****Fourth Semester at PTU GZS Campus, Bathinda****Masters in Public Health and Engineering  
(MPHE)****MPHE – 403****Hospital Facilities Management**

**Lighting and Illumination:** Introduction to lighting , luminance, intensity, Luminance flux, glare and its effect. Choice of luminaries, their cost, efficiency, power consumption. Effect of voltage fluctuations on lamps, lighting and instruments. Illumination required for various areas of hospital.

**Fire Safety:** Need to understand the causes of fire in a hospital and its hazards, precautionary and safety measures, various means of fire safety and norms.

**Electrical Services:** Understanding electrical supply system and its conducting. Circuits, Fuses, main switch box, Meter box, mini circuit breakers, power backup system.. Earthing and earth leakage protection. Energy saving system.

**Mechanical Services:** Mechanical drives – gears, types of gears, materials, application, types of tooth profiles. Belt drives – types of belts, materials of belts, applications, Chain drive – types, materials of application, Ropes – types, materials and applications. Working of elevators and escalators. Refrigeration and Air-conditioning – vapour compression cycle, working of refrigerators and air conditioning, air ducts. Types of steam, steam generation.

Types and functioning of elevators and escalators (Vertical circulation). Modern systems of Air conditioning and heating, Ducting Systems, understanding the functions of various components. Security systems, and gas supply services.