Pravara Institute of Medical Sciences (Deemed to be University)

Loni Bk – 413 736, Tal. Rahata, Dist. Ahmednagar (M.S.) NAAC Re-accredited with 'A' Grade (CGPA 3.17)

Established under Section 3 of UGC Act. 1956, vide Govt. of India Notification No.: F.9-11/2000-U.3, dated 29th September, 2003



Curriculum & Syllabus

PG DIPLOMA IN EPIDEMIOLOGY AND BIOSTATISTICS

(PGD EB)

Approved vide Academic Council Resolution No. AC/2022/D-18(iii) dated 4th October 2022

Mail: <u>registrar@pmt@pmtpims.org</u> Fax: +91-2422-273413, Phone No.: 273600 Homepage: http://pravara.com

Pravara Institute of Medical Sciences (Deemed to be University)

University Established under section (3) of UGC Act,1956. NAAC Acreditated with 'A' Grade (CGPA 3.17)

LONI - 413	73	6, (Near Shirdi), Tal. Rahata,			
Dist. Ahme	dna	agar (Maharashtra), India.			
Phone	ne : +91-2422-273600, 271000				
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Dr. Balasaheb Vikhe Patil Rural Medical College
 Kural Dental College

- Dr. APJ Abdul Kalam College of Physiotherapy
- Smt. Sindhutai Eknathrao Vikhe Patil College of Nursing
- Centre for Bio-Technology
- School of Public Health and Social Medicine
- Dr. Vitthalrao Vikhe Patil Pravara Rural Hospital

Date :

Date: 03/12/2022

Ref. No. Ref.: PIMS/R/2022/ 2044

NOTIFICATION NO. 90/2022

Sub:- Post Graduate Diploma under School of Public Health & Social Medicine, PIMS(DU), Loni.

Ref .:-

- 1. SOP/Rules governing VAP/STTP/STFP offered at constituent College of PIMS DU Vide University SOP/Rules & Regulations.
- 2. Proposal for the introduction of Post Graduate Diploma by School of Public Health & Social Medicine, PIMS (DU) Loni.
- 3. Recommendation of the Board of Studies dated 26/07/2022.

4. Academic Council Resolution No. AC/2022/D-18(iii), dated 25/08/2022.

NOTIFICATION

The Authorities of the Pravara Institute of Medical Sciences – Deemed to be University (PIMS- DU) are pleased to Notify and approve the Post Graduate Diploma Programmes:-

(1) PG Diploma in Epidemiology and Biostatistics (PGDEB).

(2) PG Diploma in Hospital and Healthcare Management (PGDHHM).

The Director of the School of Public Health & Social Medicine is authorised to offer the said Post Graduate Diploma Programmes to their students w.e.f. Academic Year 2023-24. They shall adhere to the rules/SOP of PIMS-DU governing the Post Graduate Diploma Programmes. This PG Diploma Programmes will be conducted by School of Public Health & Social Medicine, PIMS (DU), Loni.

Details of Post Graduate Diploma Programmes:-

Sr.	College	Title of the Certificate	Eligibility Criteria	Duration	Intake	Fee (Rs.)
No.		Programme			Per Batch	Per student
	-	1. PG Diploma in	UG, PG Medical, Dental,		an the down	
1		Epidemiology and	Nursing, Physiotherapy,	1 Year	20	40,000=00
		Biostatistics	Allied Health Sciences &		20	10,000 00
	School of Public	(PGDEB)	Para Medical Sciences			
	Health & Social	2. PG Diploma in	- UG, PG Medical including			
2	Medicine	Hospital and	AYUSH, Dental, Nursing,			
		Health care	Physiotherapy, Allied Health			
		Management	& Para Medical Sciences	1 Year	20	40,000=00
		(PGDHHM)	- UG, PG Biological,		ales and the second	
			Physical, Mathematical,			
			Technical and Management,			
			Arts, Commerce, Humanities			1
			and Social Sciences			- A -

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- Dr. APJ Abdul Kalam College of Physiotherapy
- Smt. Sindhutai Eknathrao Vikhe Patil College of Nursing
- Centre for Bio-Technology
- School of Public Health and Social Medicine
- Dr. Vitthalrao Vikhe Patil Pravara Rural Hospital

Date :

The Rules and Regulations as well as the syllabus of the above mentioned Post Graduate Diploma Programmes is enclosed here with as the Annexure to this Notification for the implementation and consideration of students of the college w.e.f. 2023-24.

The Director of the School of Public Health & Social Medicine shall maintain all the relevant records of the said Post Graduate Diploma Programmes (Brochure/Notification/ Time table/Resource Academic Time Table/Schedule/Attendance of Participants and Resource Persons, Evaluation, feedback certificate, photographs etc.) in their custody and submit the data and its Analysis to institutional IQAC/University IQAC annually.

By the orders of the University.

Encl. Annexure : Rules & Regulations and syllabus of Post Graduate Diploma Programmes.



Registra

Registrar

Copy to :-

Ref. No.

- Pravara Institute of Medical Sciences 1. The Director-School of Public Health & Social Medicine, PIMS-DU, Loni-Horeineplementation sity)
- 2. The Dean, Faculty of Allied Health Sciences for information and necessal priction 736, Tal. Rahata Dist. Ahmednagar (M.S. India)
- 3. Controller of Examinations, PIMS (DU), Loni.
- 4. Co-ordinator, IQAC, PIMS-DU, Loni.
- 5. Co-ordinator, SPHSM, IQAC, PIMS-DU, Loni.
- 6. PA to the Registrar PIMS-DU, Loni.
- 7. Finance Officer, PIMS (DU), Loni.

8. CET, PIMS(DV), Loni Copy for information to: 1. Hon'ble President, PIMS-DU, Loni.

2. Hon'ble Vice-Chancellor, PIMS-DU, Loni.

Rules and Regulations and Syllabus of PG Diploma in Epidemiology and Biostatistics (PGDEB)

SN	Contents					
SE	SECTION I- Rules and Regulation of PG Diploma in Epidemiology and Biostatistics					
1	Background and Significance					
2	Employment Opportunities / Career Prospects					
3	Nomenclature of Degree/Diploma					
4	The University					
5	The Constituent Unit / College					
6	The Faculty of Allied Health Sciences					
7	Pattern of the Program					
8	Duration of the Program					
9	Medium of Instruction					
10	Objectives of the Program					
11	Program Outcomes (PO)					
12	Intake Capacity					
13	Eligibility for Admission into the Program					
14	Admission / Selection Procedure for the Program					
15	After Selection Formalities					
16	Procedure for Cancellation of Admission					
17	Course					
18	Program Structure					
19	Attendance/Leave/Vacation					
20	Assessment of Course/Examination					
21	Scheme of Examination					
22	Rules of Passing					
23	Promotion of student to next semester					
24	Fees and payments					
SECTION II- Syllabus for PG Diploma in Epidemiology and Biostatistics						

SECTION I: Rules and Regulation of

Post Graduate Diploma in Epidemiology and Biostatistics (PGDEB)

1. Background and Significance

Epidemiology is the study of diseases in populations. The three main aims of epidemiology are: to describe disease patterns in human populations; to identify the causes of diseases (also known as etiology); to provide data essential for the management, evaluation and planning of services for the prevention, control and treatment of disease. Biostatistics is the branch of statistics related to medical and health applications. Biostatistics underpins the methodologies used in epidemiological investigations and research.

Epidemiology & Biostatistics are the cornerstone disciplines in Public Health, Clinical Practice and Health Sciences Research. The public health & health sciences research challenges facing the country call for the development of specialized work force like epidemiologists & biostatisticians to understand the magnitude, spread of the problems, and design & implement appropriate, need – based strategies at regional and national level. Hence various Universities offer these courses separately.

This integrated program designed by School of Public Health and Social Medicine (SPHSM) under Faculty of Allied Health Sciences of PIMS-DU aimed at healthcare professionals who wish to consolidate their knowledge and skills and increase their understanding of the importance of epidemiology and statistics in public health today to enhance the job & application opportunities.

2. Employment Opportunities / Career Prospects

Epidemiologists study the frequency and distribution of diseases within human populations and environments. Epidemiologists perform research, education, and public health practice in universities, government agencies, international organisations, and private corporations. Biostatisticians work in a wide range of industries, including contract research, pharmaceuticals, biotechnology, medicine, health care, clinical trials, health education, software development, and other specialised science and medical fields.

This programme opens an extraordinary number of pathways to a meaningful career. Career opportunities within these areas include; public health physicians, epidemiologists, biostatisticians, surveillance officer, monitoring and evaluation coordinators, data managers, research officers, public health/sanitary engineers, demographer, community health nurse and policy analyst.

3. Nomenclature of Degree / Diploma

Post Graduate Diploma in Epidemiology and Biostatistics (PGDEB)

4. The University

Pravara Institute of Medical Sciences (PIMS) - Deemed to be University

5. The Constituent Unit / College

School of Public Health and Social Medicine (SPHSM)

6. The Faculty

This Program is offered under the "Faculty of Allied Health Sciences"

7. Pattern of the Program

The program adopts Choice Based Credit System (CBCS) and Grading System.

8. Duration of the Program

Minimum duration to complete this programme is 1 year (two semesters) and maximum is 3 years.

9. Medium of instruction- English

10. Objectives of the Program

The broad aim of the program is to ensure enforcement of the basic knowledge of epidemiologic methods and its practical applications while biostatistics skills of professionals involved in the analysis of health data. The specific objectives of the PG Diploma Program in Epidemiology and Biostatistics include:

- a) To impart theoretical and applied skills in the field of Epidemiology, Research Methodologies, and Applied Statistical Methods.
- b) To enable the students to apply an epidemiological approach to the study of disease and illness.
- c) To ensure biostatistics skills of professionals involved in the analysis of health data and enforce the basic knowledge of epidemiologic methods and its practical applications.
- d) To enable to students in interpreting and assessing the evidence quality of a range of study designs and to apply appropriate statistical techniques in the analysis of public health data.

11. Program Outcomes (PO)

At the end of the course the participants will be able to

- 1. Articulate the theories and practice of epidemiology and biostatistics in various settingscommunity, clinical & research etc.
- 2. Understand the need to have affordable, available, accessible and sustainable health programs.
- 3. Understand the disease pattern and National Health Programs
- 4. Understand the community health needs
- 5. Mobilize resources, conduct planning and organize health surveys / researches
- 6. Have an appreciation on the use of computers

12. Intake Capacity: Max. 20 students per year

13. Eligibility:

- Under-graduate or Post-graduate in any Medical, Dental, Nursing, Physiotherapy, Allied Health and Para-medical Sciences
- Undergraduate or Postgraduate in any Biological, Physical, Mathematical, Technical and Management, Arts, Commerce, Humanities and Social Sciences

Note: Candidates with minimum 50% marks in above subjects from any Indian University or equivalent degree from a recognized overseas University. All Overseas university degree holders should submit their equivalence certificate from Association of Indian University (AIU) or respective statutory bodies like (MCI, DCI, INC etc.).

14. Admission / Selection Procedure:

- The selection of the students will be based purely on the CET / Merit of the marks obtained in the qualifying examination from any Statutory University in India or its equivalent degree from any other Statutory University abroad.
- Preference will be given to the candidates who have work experience in the field Public Health, Clinical Practice and Health Sciences Research or its related fields.
- An "Admission Committee" appointed by the PIMS-Deemed University will screen the applications for eligibility and other conditions/CET and oversee the admission process as per the guidelines of the University.
- In-service candidates should approach through proper channel Head of the Department and Health of Institution with a No-Objective Certificate.

15. After Selection procedures

- **Collect Provisional Admission Letter:** A provisional admission letter duly signed by the Director, SPHSM will be issued to all the admitted candidates.
- Acceptance Letter of Admission: The student to return the duly signed copy of the Provisional Admission Letter as acceptance of admission to the Director, SPHSM
- Verification of Original Documents: The following certificates will have to be submitted to the Office of SPHSM for verification at the time of finalizing the Admission of the Candidate. After confirmation of admission, all these documents will be retained by the University
 - All Degree certificates & Mark sheets/Transcripts
 - o Nationality Certificate/Domicile Certificate/Valid Passport/Aadhar Card
 - School or College Leaving/Transfer Certificate
 - Migration Certificate
 - Medical Fitness Certificate
 - Gap Certificate (if applicable)

These documents will be returned to the candidate after completion of the course.

• **Confirmation of Admission**: Admission will be confirmed only after receipt of the payment of Full Tuition Fee and other statutory fees & deposits, by the candidate within the stipulated time.

16. Procedure for Cancellation of admission

A candidate who has confirmed the admission may cancel it by submitting an application to the Director, SPHSM along with the following document

- i) Application for cancellation duly signed by the candidate & Co signed by parent/Guardian.
- ii) Original Fees Receipts.

Period of cancellation	Permissible Refund
Within Thirty days from date of admission	Entire amount of Annual Tuition Fees after deduction of processing fee of Rs. 1000/-
Within Forty-five days from date of admission	 Refund will be made after following deductions Rs.1000/- processing fee Deduction of monthly fee i.e., 10% of tuition fee
After forty-five days of admission	No cancellation of admission, entire tuition fee has to be paid

- All Deposit will be refunded in full in case of cancellation of admission.
- The permissible refund will be made after three months from date of application for cancellation. No Correspondence in this regard will be entertained during this period.

Cancellation during the conduct of the course

In the event of failure to qualify to continue the chosen Program, for what so ever reasons, the student will be liable to pay the complete course fee to secure NOC and return of original documents from the institute concerned. Application needs to be submitted to the Director of the School to this effect.

17. Course

- A "Course" is a component of Program, i.e., papers will be referred to as courses. Each course is identified by a unique course code. Papers from each semester will be given different codes i.e., courses from semester I will be identified as PGDEB 101 onwards, likewise courses from semester II will be identified as PGDEB 201 onwards.
- EL refers to elective course (e.g., PGDEB 204 EL)
- A course comprises lectures/tutorials/laboratory work/practical/field work/project work/scenariobased learning/seminar/workshop/symposia/conference etc.

18. Program Structure

All students must complete Two Semesters of six months duration each with 120 working days. In the second semester each student has to Select One Seminar topic. Both theory and practical/field visits/tutorials will be organized in each of the core subject.

Subject code	Title of Paper/ Practical	Subject code	Title of Paper/ Practical
	SEMESTER I		SEMESTER II
PGDEB 101	Fundamentals of Biostatistics	PGDEB 201	Probability & Statistical
			Inference
PGDEB 102	Introduction to Epidemiology	PGDEB 202	Clinical Research Designs
PGDEB 103	Research Methodology &	PGDEB 203	Clinical Epidemiology

	Bioethics	(EL 3)	
PGDEB 104	Social Epidemiology	PGDEB 203	Hospital & Health Systems
(EL 1)		(EL 4)	Informatics
PGDEB104	Nutritional & Environmental	PGDEB 204	Research Dissertation
(EL 2)	Epidemiology		
PGDEB 105	Practical's	PGDEB 205	Practical's

19. Attendance/Leave/Vacation

The student must meet the requirement of 75% (60%) attendance in physical classes per semester for granting the term. The Director of SPHSM shall have the right to withhold the student from appearing for university examination if the above requirement is not fulfilled. All other rules for student's Leave and Vacation will be as per the PIMS -DU guidelines.

20. Assessment of Course / Program

The final total assessment of the student shall be made in terms of an internal assessment and an external assessment. The internal and external assessment will constitute separate heads of passing and they will be shown separately in the marks sheet. For each paper meant for University evaluation, the ratio of marks for internal assessment in relation to external assessment shall be 30:70. The schedule of both the Internal and university examination will be communicated to the students through the academic calendar before starting the semester.

20.1 Continuous Internal Assessment (CIA)

CIA forms the Formative Assessment component of evaluation. It is structured to elicit the students' domain knowledge, analytical and creativity skills. The internal assessment will be continuous throughout the semester. The CIA for each theory subject would have a total weightage of 150 marks which would be assessed in the following pattern for the components mentioned in the table. The marks received by the student in CIA will be converted in to 30 marks, as an internal assessment. If the marks obtained by the student in CIA are in decimal point, it will be rounded off to next digit. The CIA will be done by the subject teacher.

Midterm written test (50 Marks)	Prelims written test (70 Marks)	Field work/ Posting (10 Marks)	Seminar/GD (10 Marks)	Assignments/ Scenario based study (10 Marks)
To be	To be conducted	Public health	One Seminar/	One assignment /
conducted in	just before	posting / field	subject/semester	subject/semester
the mid of	university exam	work		
semester				

The marks of the CIA will be communicated to the university at the end of the semester before the university exams.

20.2 External / University Assessment

The university assessment for theory subjects shall be based upon the written examination to be held at the end of each semester. The written examination will be conducted for 70 marks by the university. The schedule of the examination will be communicated by the university well in advance. All rules regarding passing or university examination will be as per university rules.

21. Scheme of Examination

Subject code	Title of Paper/ Practical		Marks			
		Internal	External	Total	Creatts	
PGDEB 101	Fundamentals of Biostatistics	30	70	100	4	
PGDEB 102	Introduction to Epidemiology	30	70	100	4	
PGDEB 103	Research Methods & Bioethics	30	70	100	4	
PGDEB 104 (EL 1)	Social Epidemiology	30	70	100	4	
PGDEB104 (EL 2)	Nutrition & Environmental Epidemiology	30	70	100	4	
PGDEB 105	Practical's	60	140	200	8	
		Total Mar	ks/Credits	600	24	
	SEMESTEI	RII	-	-	•	
PGDEB 201	Probability & Statistical Inference	30	70	100	4	
PGDEB 202	Clinical Research Designs	30	70	100	4	
PGDEB 203 (EL 3)	Clinical Epidemiology	30	70	100	4	
PGDEB 203 (EL 4)	Hospital & Health Systems Informatics	30	70	100	4	
PGDEB 204	Research Dissertation	60	140	200	8	
PGDEB 205	Practical's	30	70	100	4	
		Total Marks/Credits		600	24	
		Grand Total Credits	1200	48		

The distribution of the marks as well as credits for all the courses under PGDEBPH will be as follows.

The pattern of question paper will cover the entire syllabus. The theory paper will consist of SAQ and LAQ. However, the practical examination will cover the entire aspects of practical's, field postings, field visits and all other aspects which are not included in theory. Following are the subject wise details of examination scheme.

• Theory subjects carrying 70 marks for university examination will be assessed with following method

Que.1	Short An	Short Answer Questions (SAQ)-Attempt any four.		
	А	Short Answer Question 1	10 Marks	
	В	Short Answer Question 2	10 Marks	
	С	Short Answer Question 3	10 Marks	
	D	Short Answer Question 4	10 Marks	
	E	Short Answer Question 5	10 Marks	
Que.2	Long A	Answer Questions (LAQ)-Attemp	ot any two.	30 Marks
	А	Long Answer Question 1	15 Marks	
	В	Long Answer Question 2	15 Marks	
	С	Long Answer Question 3	15 Marks	

The question paper should give equal weightage to all the topics in the course. The questions can be subdivided as per the demand of syllabus. The time allotted for the theory examination is 3 clock hours.

• Practical subjects carrying 70 marks for university examination will be assessed with following method

Que.1	Exercise/S	Scenario based questions (SBQ)		20 Marks
	А	Exercise/SBQ 1	10 Marks	
	В	Exercise/SBQ 2	10 Marks	
Que.2	Spots			20 Marks
		5 spots * 4 Marks	20 Marks	
Que.3	Viva voce			20 Marks
Que.4	Journal			10 Marks

22. Rule of passing

The student will be declared as pass only when s/he scores minimum 50 % marks in internal as well as external examination. This rule is applicable to university subjects.

23. Promotion of student to next semester

Students are permitted to carry-over three failed courses/modules from first to second semester. However, if the student does not clear the arrears at the end of second semester s/he will reappear for the university assessments in the failed subjects in the subsequent years (maximum two years).

24. Fees and payments

The students have to pay the yearly tuition fee at the start of respective academic year in order to undertake the program. The fee structure will be decided by the university and will be revised / updated from time to time as and when it is necessary. The fee structure decided by the university at the time of entry of student in the program will remain same unless s/he completes the program. However, if the students fail to qualify to enter in second year, s/he still has to pay the entire tuition fee of the second year. The tuition fee will be collected for not more than two academic years from the students.

The other fees/charges during the academic program will be caution money, ERP Software, Insurance, Blazer, Eligibility, Registration, examination fee etc.

SECTION II

Broad Outline of the Syllabus of the PG Diploma in Epidemiology and Biostatistics

Following is the broad outline of the Syllabus of the twelve Modules, distributed into two semesters covering the topics/subjects of the disciplines of Epidemiology and Biostatistics. Following the PIMS-DU Academic Calendar, each Semester will have 6 working days, 120 -130 teaching days. Each Module will have 60 Credit hours (4 Credit points) of teaching, practical's, field work, assignments, project work, seminars, group discussions etc.

SEMESTER I (August to December)

SEMESTER I							
Course titleFUNDAMENTALS OF BIOSTATASTICSCourse CodePGDEB 101							
Course duration	August to December	Course type	Core				
Course Objective							
• To introduce students to the use of bio-statistics in Medical and Health Sciences							
• To train stu	idents in presentation and interpretation	of data					
• To train the	e students in application of statistical kn	owledge in designi	ng research studies.				
	Course Conten	t					
Introduction	on to Biostatistics						
o Def	inition and Scope						
o Role	e and Applications						
o Adv	vantages and Limitations of Statistics						
• Data							
о Тур	bes of Data, Primary and Secondary data	a					
o Sou	rces of health & medical data						
• Scal	les of Measurement of medical and hea	lth Data					
Collection	and Organization of data						
o Syst	tems of medical and health data Collect	ion					
o Met	thods of medical and health data collect	ion					
o 100	• Tools of data collection						
Classificat	ion & Presentation of Health Data						
o Prin	acipies, types & methods of classification)]]	e graphical				
	estation	i oi data – tabular d	x grapincai				
• Descriptive	e Statistics						
	asures of Location						
• Measures of Location							

- Measures of Variability
- Coefficient of Variation
- Normal Distribution and Normal Curve
- Survey and Sampling Methods
 - Importance and scope of sampling
 - Definitions and terminologies of sampling theory
 - Sampling methods and Techniques–Probability, Non-probability & Mixed
 - Estimation of Sample Sizes for various kinds of surveys and study designs
 - Sampling distributions Concept & Applications

• Correlation and Regression analysis

- Definition, types and measurement of correlation
- Definition, types and measurement of regression
- Regression analysis

• Demography, Health and Vital Statistics

- Demography Introduction, Population and growth, Age & Sex composition, Dependency Ratio, Fertility and Mortality and Other indices, Demographic transition, and Population estimation
- Health Statistics Introduction, Utilization of basic health data, Sources of health statistics, problems in collection of sickness data, measurement of sickness
- Vital Statistics Introduction, Uses, Mechanism for collection, formulae for calculation of mortality and fertility rates & ratios

- 1. Data presentation tabulation & graphs using computer software
- 2. Computations of Descriptive statistics (Averages, St. Deviations, CV) using computer software
- 3. Sample size calculation using computer software's.
- 4. To design a sampling technique, tool and collect the data from field survey
- 5. To visit PHCs, SCs and Gram Panchayat and Municipality's to study Health and Vital Statistics

SEMESTER I						
Course title	rse title INTRODUCTION TO Course Code PGDEB 102 EPIDEMIOLOGY					
Course duration	August to December	Course type	Core			
	Course Objecti	ve				
 To acquaint students to basic terminology epidemiology. To familiarize students on concepts and use of epidemiology, methods to measure and describe health of populations and risk measurement. To define the public health problems in terms of time, place and person To identify the key components of an outbreak investigation 						
	Course Conter	ıt				
 Introduction Define Property Measurem Incine Preventy Disease buthering Quane Surventy Life Measurem Surventy Life Measurem Mone Crude Epidemiologica Designation Experimentation Ansociation Infectious of Screening of Disease survents Epidemic in Uses of Epidemice 	 Introduction Definition, History, Aims, Basic principles Proportion, Ratio's and Rates. Measurement of Morbidity Incidence, cumulative incidence, incidence density. Prevalence: point prevalence, period prevalence Disease burden: Quality of life Survival rate Life table, YPLL Measurement of mortality Mortality rates Crude rate (Birth and death) Epidemiological methods Descriptive Epidemiology Analytical Epidemiology Experimental Epidemiology Screening of diseases Disease surveillance 					
Practical's						
 Calculations based on mortality rates Calculations based on Morbidity Calculations based on screening of diseases. To conduct disease surveillance in the community. 						

4. To conduct disease surveillance in the community.

SEMESTER I				
Course title	se title RESEARCH METHODS & Course Code PGDEB 103			
	BIOETHICS	Course Coue		
Course duration	August – December	Course type	Core	
	Course Ob	jective		
• To intro	oduce students to research methods &	bioethics		
• To train	n students in appropriate selection of n	nethodology		
• To train	the students in writing the research p	roposals.		
	Course Co	ontent		
Introduction	on			
o Defi	inition, Uses, Characteristics, Objectiv	ves, Motivation, Pre-	-requisites	
o Maj	or areas of health systems research			
o Prot	blems encountered by researchers			
о Тур	es of Research & Scientific Foundation	ons of Research		
Research N	Methodology and process			
o Met	hods and Process/ Cycle			
o Iden	ntification and Prioritization of Resear	ch Problems / Areas		
o Lite	• Literature Search			
o Forr	 Formulation of Objectives, Research Questions and Hypothesis 			
o Plan	nning the Measurements, Scales of Me	easurements		
Study Desi	gn Options-Quantitative Research			
o Intro	oduction, concepts, decision algorithm	n for selection of pa	rticular design	
o Bias	s and Confounding, Basic Risk Measu	rement, Association	and Causation	
• Exp (cas	 Exploratory, Descriptive (cross-sectional, epidemiological), Analytical Observational (case-control & cohort), Prospective & Retrospective studies 			
Qualitative	e Research			
o Con	• Concepts, Purpose, Methods			
o Clas	 Classification of research procedures/techniques and Variables 			
• Stat	istical tools and measurements in qua	litative research		
о Тур Тоо	 Types of variables, Scale of measurement, Data collection methods, Techniques, Tools/instruments, Data editing & data grouping 			
Data Colle	ction Methods in research			
o Sam	npling methods/techniques			
o Dete	ermination of Sample Size			
o Des	 Designing research instruments, Interview Guides and Skills 			
Data analy	sis and Management in research			

- Analysis of Quantitative Data Descriptive and inferential statistics
- Analysis of Qualitative Data
- Data Management
- Ethical Issues & Aspects of Health Research
- Construction of a Research Proposal
- Writing of thesis and Research Articles
- Bioethics

- 1. To study review of literature (online and offline sources of literature)
- 2. To develop a synopsis of your research proposal for dissertation for next semester
- 3. Critical appraisal of research article.
- 4. Application of statistical software's in data management and analysis R Program
- 5. To conduct field level testing of quantitative and qualitative research methods and data collection tools like Interview Schedule, IDI, FGD, and PRA (Venn diagram, seasonal calendars, Resource mapping, Income & expenditure matrix etc)

SEMESTER I				
Course title	Course title SOCIAL EPIDEMIOLOGY Course Code PGDEB 104		PGDEB 104	
Course duration	August to December	Course type	Elective 1	
	Course Objectiv	'e		
To acquain	t students to social epidemiology.			
• To underst methods en	and the central question of social epunployed to both understand and address	bidemiology and the them	he current theory and	
To apprecia	ate the epistemological foundations of s	ocial epidemiology	and public health	
	Course Content	t		
Introducti	on			
o Bac	kground and History			
• Issues:				
o Fun	damental issues in/for social epidemiol	ogy		
o Soc	ial conditions as fundamental causes of	disease		
o Hea	lth Inequality			
o Rac	e, Gender and Health			
Social Dete	erminants of Health			
• Theory &	Constructs:			
o The	• Theories and/or constructs that are fundamental to social epidemiology.			
• Met Nor of E	 Metatheory, Actors and Resources, Interest and Control, The Demand for Effective Norms, Individual Choice to Social Choice, Problems of Social Choice, Realization of Effective Norms 			
Measurem	ent:			
o Indi	icators of Socioeconomic Position			
o Mea	asuring Poverty			
o Mea	asuring Socioeconomic Status			
o Mea	asuring Health inequalities			
o Fun	damental Measurement issues in social	epidemiology.		
Design and	d Inference:			
o Fun	damental Design and Analysis Tools in	social epidemiolog	gy.	
		-		
Practical's				
1. Measuring	Socioeconomic status			
2. Calculation	as based on social epidemiology			
2. Measuring poverty				
3. Calculation	3. Calculations based on Morbidity, mortality and health inequalities			

SEMESTER I				
Course title	NUTRITIONAL AND ENVIRONMENTAL EPIDEMIOLOGY	Course Code	PGDEB 105	
Course duration	August to December	Course type	Elective 2	
	Course Object	ve		
To use epi occurrenceTo describe	demiologic approaches to determine of disease. Explain the importance of i the role of the informatician in public	relations between nformatics to the p health practice	dietary factors and the ublic health mission.	
• To be able t	to discern information technology from	health informatics	5.	
	Course Conte	nt		
Introduction	0 n			
o Nut	ritional and Environmental Epidemiolo	ogy2		
Epidemiol	ogical Studies of Nutritional Exposu	re		
• Eco - Co	logic Studies, Special Exposure Group ontrol and Cohort Studies, Experiment	os, Migrant Studies al Studies.	and Secular Trend, Case	
Measurem	ent of Diet in Epidemiologic Studies			
• Nut Diet Met	rients, Foods, and Dietary Pattern, a tary Assessment, Methods Based on F hods	Dimension of Tin ood Intake, Validit	ne, General Methods of ty of Dietary Assessment	
Biochemica	al Indicators of Diet			
o Cho	ice of Tissues for Analysis			
o Lim	itations of Biochemical Indicators			
Anthropon	netry and Measures of Body Compo	sition		
The Domai	in of Environmental Epidemiology			
• Exposure A	Assessment			
о Тур	es of Exposure Data			
0 Issu	es in Exposure Assessment			
• Exposure A	Exposure Assessment			
o Ran Mar	 Randomized Recruitment, Case – Crossover Design, Ecologic Studies, Time Pattern, Mapping, Comparison of Time – Trend and Spatial Analysis 			
Analysis and	nd Methodological Challenges in En	vironmental Epide	emiology	
Surveillane	Surveillance and Risk Assessment of Environmental Hazards			
Historical	Lessons in Environmental Epidemio	logy		
New Envir	New Environmental Health Challenges			
Future Nee	Future Needs			

Practical's

- 1. Measuring Socioeconomic status
- 2. Calculations based on social epidemiology
- 3. Measuring poverty
- 4. Calculations based on Morbidity, mortality and health inequalities

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Semester II (January to June)

	SEMESTER II				
Course title	PROBABILITY AND INFERENTIAL STATASTICS	Course Code	PGDEB 201		
Course duration	January to June	Course type	Core		
	Course Object	ive			
• To students	understand and appreciate use and ap	plications of proba	bility		
• To train stu scientific re	udents in presentation and interpreta asoning	tion of data to dra	aw conclusions based on		
	Course Conte	ent			
Probability	7				
o Intro	oduction, Definition, Scope & Applica	ations			
o Prot	pability Scale & Measurement of prob	ability			
o Law	vs of probability for independent even	ts			
o Con	ditional Probability & Bayes' theorem	n			
• Othe	er applications of probability				
 Probability 	y Distributions				
• Introduction					
o Bine	• Binomial distribution				
• Poison distribution					
• Nor	• Normal distribution				
∘ 't' d	• 't' distribution				
• Othe	er distributions				
Basis of Sta	atistical Inference				
• Intro	oduction				
o Sam	pling distributions				
	 Standard Error of Mean, 				
	 Standard Error of Proportion, proportions 	Difference betwee	en two means & two		
	 Standard error of difference between 	en two means			
 Standard error of difference between two proportions 					
• Stat	istical inference – Estimation and Tes	ting a Hypotheses			
o Typ	e I and Type II Errors	- ••			
• Tests of Sig	gnificance – Parametric Tests & Est	timation			
o Intro	oduction				
o Proc	cedure for large samples				
o Dro	padura for small samples				

- Z test
- t-test Fisher's test, Paired t-test, Unpaired t-test
- X² test Small Samples & Large samples, Formula, Computations, Precautions, Yate's correction,
- Analysis of Variance ANOVA
 - The F-test
 - One way ANOVA
 - Two way (two factor) ANOVA
 - Mixed Design ANOVA
 - Factorial Design ANOVA
 - Multivariate Analysis of Variance (MANOVA)
 - Assumption of ANOVA
- Tests of Significance Non-parametric & Distribution free Tests
 - o Introduction
 - Advantages & Disadvantages of Non-parametric tests
 - Some Non-parametric test with examples

Regression analysis

- Introduction
- Linear Regression
- Non-linear Regression
- Multiple regression / Multivariate Analysis
- Logistic Regression, Polynomial Regression, Ridge Regression
- o Lasso Regression, Poisson Regression
- Computer Statistical Software's for Analysis & Interpretations of data :
 - Microsoft Excel
 - o Epi Info,
 - R Program

- 1. Practical exercises on Probability, Statistical inference tests of significance (parametric and non-parametric) and estimation of population parameters etc
- 2. Practical exercises on regression analysis
- 3. To study the data analysis, management and its applications using Microsoft excel, Epi Info and R Program
- 4. To study the sampling distributions and test of significance, regression analysis using Computer software's like R Program

SEMESTER II					
Course title	Course titleCLINICAL RESEARCH DESIGNSCourse CodePGDEB 202		PGDEB 202		
Course duration	January - June	Course type	Core		
	Course Obj	jective			
To Introduc	ce the students with clinical research ar	nd clinical trials			
To impart tTo train the	e students in regulations and documenta	ation in clinical trials	ials		
	Course Co	ntent			
Introduction	on				
o Sou	rces of Drug and Routes of drug admir	nistration			
• Bas pha	ic pharmacology and clinical researmacokinetic (ADME), drug interaction	arch - Receptor ns, clinical resear	rs, drugs, pharmacodynamic, ch, preclinical studies		
o Intr	oduction to pharmaco-economics				
Intervention	onal/Experimental Research Designs				
o Dia	gnostic/experimental/interventional dea	signs			
• Prir loca	nciples of experimental & Quasi expendent	rimental studies	- randomization, replication &		
o CR	D, RBD, Latin square, Factorial Design	18			
Clinical tri	ials				
o Dru	ig Discovery and drug Development				
• Nev adv	w drug discovery process- purpose, antages and purposes of each steps,	main steps invol	ved, timelines of each steps,		
o Eth	ics in clinical research, unethical trials,	thalidomide trag	edy,		
• Des surv	 Design and organization of phase-I, phase-II, phase-III, phase-IV trials- Post Marketing surveillance 				
• Met and Ter	 Methods -Principles of sampling -Inclusion and exclusion criteria - Methods of allocation and randomization -Informed consent process in brief - Monitoring treatment outcome - Termination of trial -Safety monitoring in clinical trials 				
o Poli	icies & procedures of Community base	d Clinical Trials			
Regulations and Documentation in Clinical Trials					
o Reg	• Regulatory requirements in clinical trials, Schedule Y, ICMR guidelines etc.				
o Doc Pro Tria	 Documents in clinical study Investigator Brochure (IB), Protocol & Amendment in Protocol, Case Report Form (CRF), Informed Consent Form (ICF), Content of Clinical Trial Report, Essential Documents in Clinical Trial 				
o Goo ICM	od Clinical Practice: ICH guidelines /IR Guidelines	Indian GCP gu	idelines (CDCSO guidelines)		
◦ Eth	• Ethical Guidelines for Biomedical Research on Human Subjects				
Pre-clinical toxicology					

- General principles
- Systemic toxicology (Single dose and repeat dose toxicity studies)
- Carcinogenicity, Mutagenicity, Teratogenicity, Reproductive toxicity, Local toxicity, Genotoxicity, animal toxicity requirements

• Adverse Drug Reaction

- Epidemiology,
- Definition and Classification,
- Predisposing factors,
- Types of ADRs and their mechanism,
- Detection and Monitoring of ADR, Identification of ADR
- Pharmacovigilance
- Clinical Trial Application in India (CTRI registration process)
- Import & Export Drug Policies of India and Other countries, especially USA

- 1. To study the protocol writing.
- 2. To study the synopsis preparation.
- 3. To study the IEC form filling.
- 4. To study the documentation of ongoing clinical trials.

SEMESTER II					
Course title	rse title CLINICAL EPIDEMIOLOGY Course Code PGDEB 203				
Course duration	January to June	Course type	Elective 3 (EL 3)		
	Course Object	ive			
 To calculate association and To compare a 	• To calculate and interpret appropriate measures in order to describe disease frequency, association and attributable risk for given scenarios.				
 To compare a strengths and Calculate set 	l weaknesses.	negative predictiv	e values in order to		
interpret these	e values in the context of screening.	lieguitte predictiv			
• To identify d apply strategi	lifferent types of biases that may occ ies to reduce such biases.	ur in epidemiologi	cal studies, in order to		
	Course Conte	nt			
Measuremen	nt:				
 Measure Associonation (Associonation) Attribution (Associonation) Sensition (Associonation) Study Design (Associonation) Case (Measures of Association, Relative Measures of Association, Absolute Measures of Association Attributable Risk, Population Attributable Risk, The Prevention Paradox Sensitivity and Specificity, Predictive Values, Screening, Evaluating Screening Disease Detection and Diagnostics Tests Study Designs in Epidemiology: Introduction to Study Designs: Ecological and Cross-Sectional Studies Case – report and Case – Series Case Control Studies: Measures of Association: Odds Cohort Studies and Nested Studies: Measures of Association: Relative Risks Randomized Controlled Trials Validity and Biases in Epidemiology Introduction to Validity and Biases Confounding: Introduction, Criteria Dealing with Confounding: Confounding at Design Stage and at Analytical Stage 				
• Blase	es in Epidemiology	Drovention			
• Pandemics:	Measurement, Risks, Impacts, and	Prevention			
	Practical's				
1. Diagnostic T	lest Metrics				
2. Measures of	Association: Odd's and Relative Risk	Calculations.			
2.5.0		PC Diploma in Eni	domiology and Biostati		

SEMESTER II			
Course title	HOSPITAL AND HEALTH SYSTEMS INFORMATICS Course Code PGDEB 203		PGDEB 203
Course duration	January to June	Course type	Elective 4 (El 4)
	Course Object	tive	
• To explain	the importance of informatics to the pu	blic health mission	
To describe	e the role of the informatician in public	health practice	
• To be able	to discern information technology from	health informatics	•
	Course Conte	ent	
Introduction	on		
o Hea	lth Informatics Definition		
o Cor	nponents and Functions		
Overview	of Field and Problems That Motivate	eit	
o Pro	blems that informatics tries to address	in healthcare.	
o Nee	ed for informatics.		
Health Dat	ta, Information, and Knowledge:		
o Info	prmatics for improvement in healthcare		
o Act	ionable healthcare system due to Healt	h Informatics	
Hospital S	tatistics		
 Hospital data related to quality of care, Utilization of services, quantity of services delivered, work load and other hospital related administrative and logistic affairs - <i>Example: 1</i>) <i>Daily Census, 2</i>) <i>Daily Average Attendance, 3</i>) <i>Bed Occupancy Rate, 4</i>) <i>Average Length of Stay, 5</i>) <i>Abortion Rate, 6</i>) <i>Hospital Infection Rate, 7</i>) <i>Death Rate, 8</i>) <i>MMR 9</i>) <i>IMR</i> 			
• Inte Pro	 International classification of Diseases (ICD), International Classification of Procedures (ICP) and International Classification of Deaths – WHO Classification 		
Electronic	Health Records		
o Des	cribe and demonstrate the Electronic H	lealth Records	
o Sup	port in Clinical Decision.		
o Use	of clinical data		
Personal H	Iealth Records and Decision Aids &	Information Retrie	eval (Search)
Bioinformatics			
o Info	ormatics in public health, genomics and	l molecular biology	
Informatic	s Applications in Public Health		
o Use	of Health Informatics to improve publ	ic health.	
Data Scien	ce, Analytics and Visualization		
o App	bly analytical and visualization skills to	datasets.	

• Analytics for improving healthcare

• Ethical Issues in Health Informatics

- Confidentiality and security
- Minimize discrimination that might occur from data, algorithms, and the digital divide.

- 1. Hands on training for Electronic Health Records.
- 2. Exposure visits to different healthcare facilities using Health Informatics.
- 3. Exposure to various databases maintained by Government and Non Governmental Organizations.
- 4. Visit to Medical Record department of tertiary hospital to study hospital statistics.

SEMESTER II					
Course	ourse title RESEARCH DISSERTATION Course Code PGDEB 204				
Course	e duration	January to June	Course type	Core	
		Course objec	tive		
•	To enable t study.	he student to gain an in-depth insight in	nto a particular fiel	d or topic chosen for	
•	To apply th	e knowledge of the research methodol	ogy in practical		
		Course descri	ption		
•	 Based on the actual training imparted in the course, the student shall conduct a research dissertation under the guidance of a faculty. The topic for the research may be related to any current public health issue and can be selected in consultation with the guide and course coordinator. The topic for the research should be chosen based on an area of interest and should be done in 				
•	The studen could work	t should choose the research setting f under the constant guidance of the res	or the dissertation earch guide allotted	in any place where they d.	
		Course Cont	tent		
of 10th semesta Steps i 1. 2. 3. 4. 5. 6.	er itself. n conductin The studen Semester w can consul methodolog Once the s Institutiona Students ha the approva Students ca aspect during reports. The Students have at least atte	ng research dissertation. Its should start developing the researce while they study the theory subject Researce while they study the theory subject Research it with their guide, course coordinate gy subject. ynopsis of the research is ready, stud and Research Committee (IRC) for ethicate ave to present their proposal before the and complete their field work including ing the Second Semester. During this the progress report should be signed by gree expected to attend Workshop on Research ave to present their research finding in nd one National/International conference	h proposal from the earch Methodology ator and the subj ents have to apply al clearance. I clear	he beginning of the First y. During this period they ect teacher of research y in a prescribed form to earch Committee and get ata analysis and all other e to submit two progress l to the IRC. y during First Semester. ternational conference or	
7. 8. 9.	 Students also have to publish minimum one research article based on their research in the indexed (Scopus/Pub Med / Google Scholar / UGC approved) national/international journal. Final submission of the research dissertation will be before the University Final semester Examinations. The format for the dissertation will be as prescribed by the university. The certificate of the paper presentation in the conference and paper publication should be 				
10.	attached at Four copie institution a	the end of the thesis. s (five in case of co-guide) of resea along with a soft copy. No dissertation	arch dissertation sl will be accepted w	hall be submitted to the ithout guide's signature.	

SEMESTER II				
Course title	Practical's based on PGDEB 201 to 203	Course Code	PGDEB 211	
Course duration	January to June	Course type	Core	
Course Objective				
• To impart the practical training in the students through demonstration, field visit, field survey and field studies.				
Course Content				
• The content of this course will be as per the practical's and field visits mentioned at the end of each course of semester II				

