Board of Studies Document

for

Master of Public Health
(Epidemiology and Health Systems)

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1. Summary

National Institute of Epidemiology (NIE), ICMR School of Public Health, Chennai has been conducting two off-campus programmes of Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST): (1) Master of Applied Epidemiology (MAE) programme since 2001 (2) Master of Public Health (Health Services Development and Research) (MPH-HSDR) since 2008. The aim of these programmes is to develop a cadre of trained public health professionals in the country with the emphasis on training the 'in-service' health professionals working in government health departments.

In 2010, we analyzed the current status of the two programmes in the context of prevailing public health training activities in the country as well as in light of launching of the National Rural Health Mission (NRHM) and the need for ensuring quality assurance mechanisms while expanding academic activities at NIE.

Globally and locally there seems to be a better recognition of the MPH degree, as also a rapid increase in the number of institutions in the country offering the same. At NIE, both the existing programmes mainly target *'in-service'* middle-level cadre of government health professionals. However, we have observed that since 2008, the government health departments (as well as the applicants) prefer sponsoring/deputing candidates to the MPH programme at NIE or other institutions.

While the existing MAE programme adopted a "hands-on approach" to learning, the MPH (HSDR) programme predominantly provides learning in the domain of "foundational knowledge". Towards ensuring quality improvement, NIE had been collecting feedback from the graduates/scholars of the two programmes. Further, the programmes were peer-reviewed by (1) internal faculty members (2) experts from international universities with long-standing experience of running similar courses. All these peer-reviews pointed to the need for reviewing and revising the structure and content of the existing programmes. For the MAE programme, the specific recommendation was to increase the duration of contact sessions and align the course contents with the health system goals and reforms such as NRHM. For the MPH (HSDR) programme, the suggestion was to (1) reduce the overall class-room teaching time (2) make it a competency-based programme with emphasis on field experience and acquiring practical skills in applied epidemiology.

Being mindful of these feedback and situational factors, NIE proposes to integrate the existing two programmes, building on their respective strengths, into a single competency-based-Master of Public Health (Epidemiology and Health Systems) [MPH (EHS)] programme. The proposed MPH programme which will use the 'learning by doing' model of MAE will combine

the best of both the existing programmes and will have the focus on applied epidemiology and health systems. The seven competencies of the proposed programme are to (1) understand the scope and concepts and master the methods in epidemiology, (2) plan, implement and evaluate public health surveillance, (3) investigate the outbreaks, (4) conduct public health research in accordance with principles of human subject protection, (5) communicate public health information to lay and professional audiences, (6) conceptualize the elements of health systems to effectively design, develop, implement and evaluate the public health interventions and (7) comprehend the biological, social, behavioural, environmental determinants affecting health.

As a part of the proposed MPH (EHS) programme, the scholars will spend 13 months (55%) of their time in four 'contact sessions' at NIE, while for the remaining 11 months (45%), they will be placed in their districts/workplace as a part of the 'field postings' for conducting various field projects. During these 'field postings', the scholars will conduct five field projects i.e. (1) public health situation analysis (2) surveillance data analysis (3) outbreak investigation (4) evaluation of health programme and (5) dissertation.

The courses and field projects in the proposed MPH (EHS) in comparison with the existing MAE and MPH (HSDR) are shown in Fig.1.

The most significant changes in the proposed MPH curriculum include (1) a course on Applied Epidemiology which would cover principles and methods of disease surveillance, outbreak investigation, basic and advanced data analysis using statistical software and field exercise; (2) extensive revision of the Health Systems course of existing MPH (HSDR) in order to provide the students a broad knowledge and understanding of the concepts of the six building blocks of health systems i.e. governance, health financing and health economics, human resources, drugs and technology, service delivery and health information systems; and (3) addition of field-based projects to promote *'learning-by-doing'*.

In order to account for the additional time for field projects as well as the Applied Epidemiology and Health System courses, the duration and content of the other courses offered in the proposed MPH (EHS) programme will be reduced in comparison with the existing MPH (HSDR). In particular, the Reproductive and Child Health (RCH) curriculum from the existing MPH (HSDR) will not be taught as a separate course in the proposed MPH programme. RCH will be incorporated in the Health Systems course of the proposed MPH programme as an example to illustrate the concepts of the six building blocks of health system. The existing curriculum of Social and Behavioural Sciences will be revised and down-sized in the proposed MPH programme mainly to provide a broad understanding of the concepts with a focus on qualitative research methodology. "Professionalism" will not be taught as a separate course with credits. Keeping in mind the cross-cutting nature of the subject, the proficiency in "Professionalism" will be built across all the courses and field projects, as appropriate to the context.

The proposed MPH (EHS) will be a 60 credits programme (100 credits for existing MPH) with 22 credits for the courses offered during contact sessions (60 credits for courses offered in the existing MPH programme) and 38 credits for various field projects (40 credits for practicum and dissertation in existing MPH). In the proposed MPH, one credit is equivalent to 40 teaching hours for the courses during contact sessions at NIE (20 hours for the existing MPH). A comparison of the credits and teaching time for the courses for the existing MPH (HSDR) and the proposed MPH (EHS) (Table 1) and the credits for various field projects and their duration for the existing MAE, MPH (HSDR) and proposed MPH (EHS) (Table 2) are summarized below.

Table 1: Comparison of credits and teaching time for the courses in the existing MPH (HSDR) and proposed MPH (EHS) programmes

	Courses	Existing MPH (HSDR) programme		Proposed MPH (EHS) programme		
		Teaching hours	Credits*	Teaching hours	Credits**	Change in teaching hours as compared to MPH (HSDR)
1	Principles and practice of public health	20	1	20	0.5	0
2	Epidemiology-principles and methods	120	6	100	2.5	-20
3	Biostatistics	120	6	100	2.5	-20
4	Demography	40	2	20	0.5	-20
5	Health systems	160	8	200	5	40
6	Professionalism	20	1	0	0	-20
7	Chronic (non-communicable) diseases and Injury Epidemiology	60	3	40	1	-20
8	Epidemiology of infectious diseases	80	4	40	1	-40
9	Media, advocacy and communication	100	5	60	1.5	-40
10	Public health nutrition	80	4	20	0.5	-60
11	Occupational & environmental health	80	4	20	0.5	-60
12	Social and behavioural sciences	180	9	60	1.5	-120
13	Reproductive and child health	140	7	Incorporated under the Health Systems course for 20 hours.		-120
14	Applied Epidemiology	0	0	200	5	200
15	Examination time	***	0	80	0	
	TOTAL	1200	60	960	22	-240

(* 1 credit= 20 teaching hours, ** 1 credit=40 teaching hours, *** Examination time was included in the course time)

Table 2: Comparison of the credits and duration for the field projects in the existing MPH (HSDR), MAE and proposed MPH (EHS) programmes

Field projects	MPH (HSDR)		MAE-FETP		MPH (EHS)	
	Duration (weeks)	Credits	Duration (weeks)	Credits	Duration (weeks)	Credits
Public Health Situation analysis	0	0	24	2	2	1
Secondary data analysis	0	0		3	6	4
Surveillance evaluation	0	0		11	0	0
Journal critique	0	0	24	1	0	0
Outbreak investigation	0	0		12	6	4
Programme evaluation	0	0		6	10	5
Practicum	12	15	0	0	0	0
Dissertation	24	25	24	15	32*	24
Review of literature for dissertation				2		
Total	36	40	72	52	56	38

(*Includes 4 weeks of contact session for protocol preparation and 8 weeks of contact session for data analysis and manuscript writing)

The admission criteria for the proposed MPH (EHS) will remain same as that of the existing MAE and MPH (HSDR) with preference for the 'in-service' candidates sponsored by the state/central health departments, except for the following changes:

1. *Course eligibility:* The upper age limit for the admission will be increased to 45 years from the existing limit of 40 years

2. *Selection committee:* The nominee of Secretary, Department of Health Research (DHR)/DG, ICMR will be a member of the selection committee

3. *Number of seats:* The proposed programme will admit a maximum of 30 scholars in an academic year. However, the number of seats available in a given academic year will be based on the faculty strength at NIE such that the faculty: scholar ratio of 1:2 is maintained.

2. Brief overview

National Institute of Epidemiology, Chennai is the permanent institute of Indian Council of Medical Research. NIE was established in 1999 by merging the Institute of Research in Medical Statistics (Madras chapter) and the Field unit of the Central JALMA institute for Leprosy with the mandate of developing the sciences of epidemiology and bio-statistics, strengthening the human resources base in epidemiology and bio-statistics and network various ICMR and non-ICMR Institutes at the national level for epidemiological purposes. Towards the mandate of strengthening the human resources base in epidemiology and bio-statistics, NIE has been conducting Master of Applied Epidemiology and Master of Public Health (Health Services Development and Research) programmes. A brief overview of these programmes is as follows:

2.1 MASTER OF APPLIED EPIDEMIOLOGY-FIELD EPIDEMIOLOGY TRAINING PROGRAMME

In 2001, the National Institute of Epidemiology (NIE) initiated the Master of Applied Epidemiology-Field Epidemiology Training Programme (MAE-FETP). The goal of the programme is to facilitate the development of a cadre of public health professionals who are practitioners of epidemiology at the field level and competent in addressing public health needs and priorities efficiently and effectively. MAE-FETP is an off-campus programme of Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Thiruvananthapuram, Kerala, an institute of National importance and International repute.

Programme philosophy and course organization: MAE-FETP has been modelled on the Epidemic Intelligence Service (EIS) programme of the Centers for Disease Control and Prevention (CDC), Atlanta and the MAE programme of the Australian National University. It provides two-year *'learning-by-doing'* experience for middle level health mangers with an interest in developing careers in epidemiology and public health. The programme admits 15 scholars per year since 2009.

MAE-FETP consists of two parts. ***The first part*** is six-months (25% of course duration) of *'on campus'* training, during which the scholars receive theoretical inputs through residential contact sessions at the NIE. ***The second part*** extends for 18-months (75% of course duration) of field-based experience spread over three "field postings" of six-month duration each. The duration for contact sessions and field postings was decided considering the time required for learning different courses during the contact sessions and conducting the field projects.

Contact sessions: The first contact session include an initial foundation course in applied epidemiology, bio-statistics and public health surveillance. In the subsequent contact sessions, the scholars receive inputs on programme management, scientific writing, health economics and qualitative studies.

Field posting: During the field postings, the scholars plan and execute epidemiological projects of immediate relevance to public health practice at field placement site. The scholars and NIE in consultation with the sponsoring authorities identify the field placement site (usually at a district level/workplace). During the field work, the scholars receive technical support from the line-managers (which include the public health experts and programme managers available at the placement sites) and NIE-based mentors. During this part of the course, the scholars not only get hands on practical experience but also provide valuable information to the district health services

Curriculum and competencies: MAE-FETP is a member of the Training programs in Epidemiology and Public Health Interventions Network (TEPHINET), a consortium of applied epidemiology training programs across the world and uses an international curriculum template for the programme. ***MAE-FETP at NIE has additional modules (e.g., programme evaluation) to suit the needs of the Indian public health system.*** The MAE-FETP curriculum combines in-class training and practical *'hands on'* experience through mentored field-work. The field-work provides practical learning opportunities for the scholars to implement concepts learnt during the contact sessions, work on the locally relevant problems and acquire the competencies expected of them.

The seven core competencies of the programme include ***(1) mastering epidemiological science (2) investigating the outbreaks (3) managing public health surveillance (4) conducting epidemiological studies (5) protecting human subjects in research (6) oral and written communication and (7) programme management and evaluation***. Towards achieving these competencies, the scholars conduct the following field-based projects during the 18 months of field postings:

(1) **Public health situation analysis:** As a part of this assignment conducted at the beginning of the first field posting, scholars review the situation in the field placement site and its population to place it into a public health perspective. This analysis presents key selected health indicators (e.g., indicators towards the achievements of the Millennium Development Goals or National/State health others), delineates the public health priorities for the assigned field site and identifies topics for further investigation under different field projects as well as the candidate's dissertation.

(2) **Outbreak investigations:** The MAE-FETP model proposes capacity building to enable quality investigations of disease outbreaks, with full technical support from the faculty. Standard operating procedures consist of the classical 10-step approach that goes through four main stages of (1) confirmation, (2) hypothesis-generation (3) hypothesis-testing and (4) recommendation of prevention measures. Peer-review at all stages of the investigation and reporting is the key to the quality assurance process.

(3) **Surveillance projects:** Public health surveillance is one of the seven core competencies of the MAE-FETP. Scholars produce two reports: First, an analysis of surveillance data and second, an evaluation of surveillance system. These two mandatory projects help build the attitude that a public health person needs to develop in terms of surveillance: ***knowing everything one can say with the data and everything one cannot say with the data.***

(4) **Programme evaluation:** Scholars evaluate a public health programme with a focus on logical framework and development of input, process, output and outcome indicators to identify existing gaps.

(5) **Operational research projects:** As a part of the dissertation, scholars have to conduct an epidemiological study on a health problem relevant to the locality. The process that leads to formulation of the right research question is the key to the epidemiologic investigation. The line managers play an important role in guiding the scholars to identify a locally relevant health problem for epidemiological investigation.

Key achievements: The alumnus of 88 MAE-FETP graduates and 24 current scholars of NIE spread over 17 Indian states form a potential workforce to deal with epidemiological challenges faced by the country. Several of the graduates are holding key positions in disease surveillance and other public health programmes in different parts of the country. All the MAE-FETP investigations are disseminated at the district and/or the state level to ensure that those who need the information the most can take immediate action. Scholars' work was also presented in national and international conferences (55 oral presentations and 120 poster presentations) and published in peer-reviewed literature (43 published papers). The Indian FETP alumni network (IFANet), established to provide a platform for MAE-FETP graduates to share the knowledge and experiences with each other and other public health professionals and to update them with current knowledge, is also playing an important role in implementation of epidemiology training through mentoring of current scholars.

2.2 MASTER OF PUBLIC HEALTH (HEALTH SERVICES DEVELOPMENT RESEARCH)

The Indian Council of Medical Research (ICMR), in 2006, established the **ICMR School of Public Health** (ICMR-SPH) at NIE with the primary goal of creating professional and efficient public health trained manpower at different levels of health system in different regions of the country. The ICMR-SPH at NIE started its ***Master of Public Health (MPH)*** programme in 2008 as an off-campus course of SCTIMST. Like MAE, the primary focus of this programme is to train the in-service middle level health managers from Indian health services.

Course organization: This is a two-year residential programme that admits 15 scholars per year. The programme is divided in three phases. During ***the first phase*** of 15 months, the scholars are

offered the ***core courses*** in a modular format at the NIE as well as at different partner institutes. For these core courses, theoretical instructions constitute about 60% of the total teaching hours while practical experience including field visits constitute 40% of the time. The faculty for the core courses are drawn from ICMR and other partner institutes.

During ***the second phase***, the scholars spend three months of time on a ***practicum*** in order to gain hands-on experience that involves supervised practical application of theory learnt during the first phase. In the ***third and last phase***, the scholars spend their last six months of the course in doing a ***dissertation*** work, preferably, in their own districts/workplace.

Course curriculum: The MPH programme is of 100 credits. The core courses are of 60 credits, practicum of 15 credits and dissertation of 25 credits. The core courses offered by the MPH programme are given in table 3:

Table 3: Core courses and credits for MPH (HSDR)

Sl. No	Core course	Credits
1	Principles and practice of public health	1
2	Epidemiology-principles and methods	6
3	Epidemiology of infectious diseases	4
4	Chronic (non-communicable) diseases and Injury Epidemiology	3
5	Biostatistics	6
6	Demography	2
7	Health systems, health management, health economics, ethics, public health laws	8
8	Social and behavioural sciences	9
9	Reproductive and child health	7
10	Public health nutrition	4
11	Occupational and environmental health	4
12	Media, advocacy and communication	5
13	Professionalism	1

Key achievements: The MPH programme is now in its third year. There has been a growing demand for the programme as reflected in the large number of applications received in the second (no. of applications: 52) and third year (no. of applications: 39). The course has admitted 42 scholars in the first three cohorts including 37 scholars sponsored by the state/central government. All the 12 scholars from the first cohort completed course requirements during November 2010. The 15 scholars from the second cohort completed their core courses and in October 2010 started their practicum at various partner institutes in the country. They will be

completing their dissertation by June 2011. The third cohort of 15 scholars has been admitted in July 2010.

3. Revising the course contents/structure

Master of Applied Epidemiology (MAE)-Field Epidemiology Training Programme (FETP): Since the inception in 2001, the structure of the MAE-FETP has remained the same, with 25% of the time spent in the contact sessions and 75% of the time on the field posting. The contents of the programme, however, have been suitably modified with the approval of the Board of Studies, in order to meet the changing needs of the Indian public health system. The feedback from the graduates and scholars pointed to the need for increasing the time spent for the contact sessions to better prepare the scholars for their field projects and optimally utilize the time spent during the field postings. Further, change is needed in the course content to align it with the health system goals and reforms under the National Rural Health Mission (NRHM), the flagship health care delivery programme of the country.

In order to improve the performance of the scholars in conducting their field projects and ultimately acquiring the competencies, few revisions are needed in the programme. Essentially the changes were meant to accommodate additional time for the following:

- First contact session
    - One-week course on “Principles and practice of public health”
    - Conducting the field exercise
    - Examinations
- Second contact session
    - Prepare the protocol for surveillance and programme evaluation and obtain the approval of Institutional Ethics Committee
- Third contact session
    - Finalize and submit six field project reports
    - Prepare the protocol for the dissertation and obtain the approval of Institutional Ethics Committee
- Fourth contact session
    - Data cleaning, entry, analysis and preparing the dissertation report

Master of Public Health: NIE reviewed the experience of the first two cohorts of MPH, assessed the feedback from the internal and external faculty for the MPH programme and examined the course content/structure along with the experts from Swiss Tropical and Public Health Institute and Boston University School of Public Health who have an extensive experience of running

similar programmes. These deliberations indicated the need to revise the existing course contents to address the following concerns:

1. *Overall credits:* The existing MPH programme is of 100 credits equivalent to 2000 hours of teaching time. There is a need to reduce the overall classroom teaching time and hence the total number of credits.
2. Considering the 'in-service' nature of the scholars, more time is required (without increasing the contents) for certain courses such as epidemiology methods, biostatistics, and statistical software.
3. Some of the courses are heavy on delivering 'theoretical concepts' and there is a need to make them competency-based.
4. Unlike MAE, scholars pursuing the MPH programme do not get an opportunity to acquire certain essential skills for working as the field level programme managers. Scholars of MPH programme must also be competent to investigate outbreaks, analyse the surveillance data and evaluate health programmes.
5. The time for practicum [three months] is either not effectively utilized or becomes too long a commitment for the participating institutes i.e., practicum sites. Further, there is a need to improve the mentoring during the practicum by clearly outlining the terms of references for the scholars as well as the practicum mentors.

4. Master of Public Health (Epidemiology and Health Systems)

In view of the above mentioned issues regarding the existing MAE-FETP and MPH programmes it is imperative to revise their content and structure in order to satisfactorily fulfil the mandate of public health training being imparted by NIE. Herewith, we propose to integrate the two existing programmes, building on their respective strengths into a single competency-based, programme. With a focus on applied epidemiology and health system, the proposed MPH programme will have the basic *'learning-by-doing'* model of MAE-FETP. This programme will also cover other disciplines of public health as in the existing MPH (HSDR) such as Health Systems (with a focus on National Rural Health Mission), Social and Behavioural sciences (with emphasis on qualitative research methods), Public Health Nutrition, Media and Communication and Occupational and Environmental Health.

4.1. Competencies

The broad competencies of the proposed MPH programme are as under:

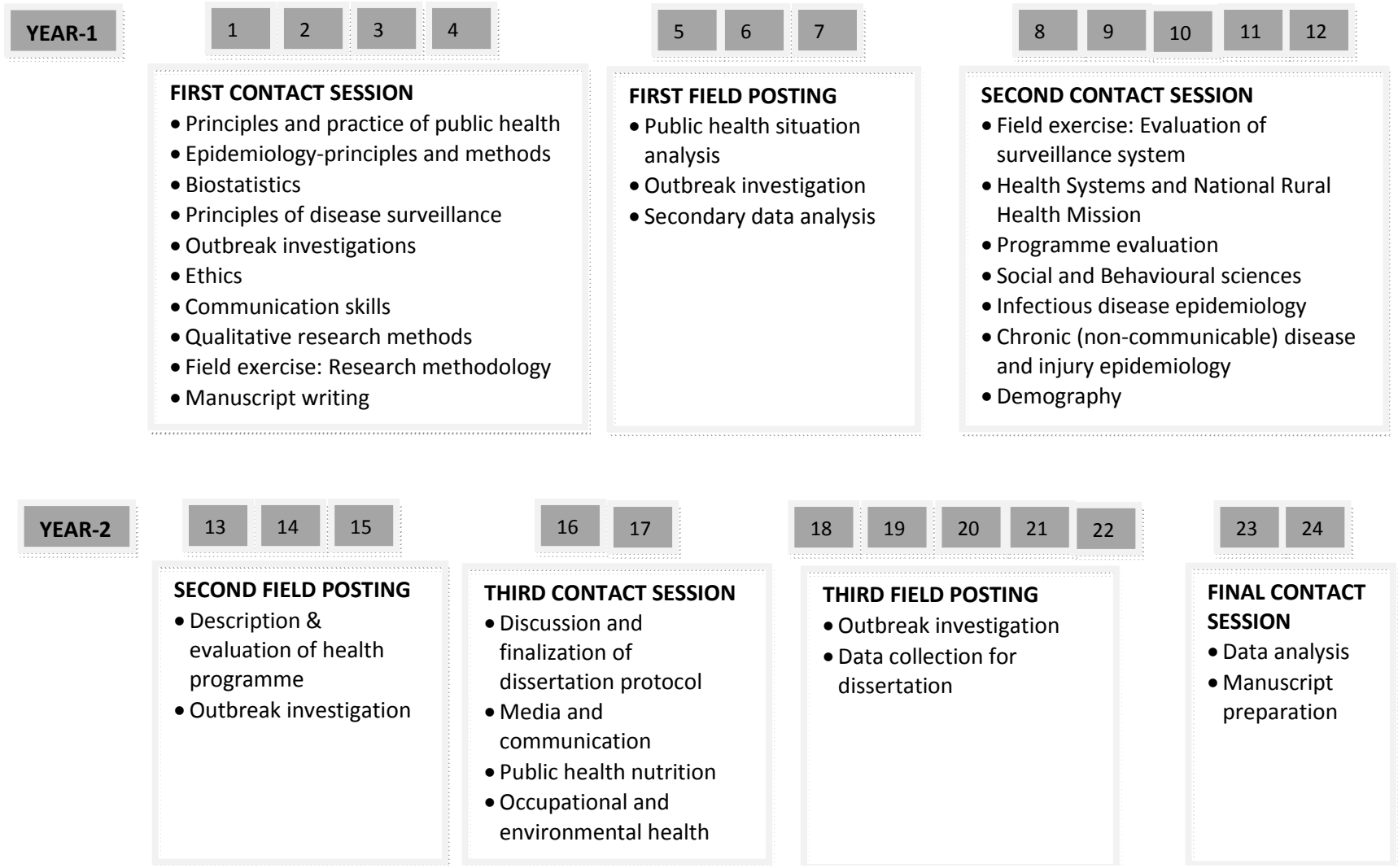
(1) Understand the scope and concepts and master the methods in epidemiology
(2) Plan, implement and evaluate public health surveillance

(3) Investigate the outbreaks
(4) Conduct public health research in accordance with principles of human subject protection
(5) Communicate public health information to lay and professional audiences
(6) Conceptualize the elements of health systems to effectively design, develop, implement and evaluate the public health interventions
(7) Comprehend the biological, social, behavioural, environmental determinants affecting health

4.2. Course organization

The MPH (Epidemiology and Health Systems) will be a two year programme, comprising of four contact sessions across 13 months at NIE interspersed with three field postings of 11 months duration in total. The details of the contact sessions and field postings are summarized in Fig.2.

Fig 2: Course organization of the proposed MPH (Epidemiology and Health systems)



4.3. Course credits

The proposed MPH programme will have a total of 60 credits, of which 22 will be for the contact sessions at NIE and 38 for various field projects and related assignments. For the contact sessions, 40 hours of class-room time would constitute one credit. The distribution of credits for the courses that will be covered during the contact sessions and various projects to be conducted during the field postings are summarised in the following table:

Table-3: Distribution of credits for the MPH (Epidemiology and Health systems) programme

Courses	**Contact session**		**Field posting**		**Total credits**
	Modules	**Credits**	**Field projects**	**Credits**	
Principles and practice of public health	Principles and practice of public health	0.5	Public health situation analysis	1	1.5
Epidemiology	Epidemiology-principles and methods	2.5	Secondary data analysis	4	17.5
	Applied Epidemiology	5	Outbreak investigation	4	
	Infectious disease epidemiology	1			
	Chronic (non-communicable) diseases and Injury Epidemiology	1			
Bio-statistics	Bio-statistics	2.5			2.5
Demography	Demography	0.5			0.5
Health systems	Health systems	5	Programme evaluation	5	10
Social and behavioural sciences	Social and behavioural sciences	1.5			1.5
Media and communication	Media and communication	1.5			1.5
Nutrition	Public health nutrition	0.5			0.5
Occupational and environmental health	Occupational and environmental health	0.5			0.5
			Dissertation	*24*	24
TOTAL		**22**		**38**	**60**

(*Includes 20 hours of Reproductive and Child Health,

**Includes 4 weeks of contact session for protocol preparation and 8 weeks of contact session for data analysis and manuscript writing)

4.4. Submission of the field project reports

4.4.1. Dissertation: The scholar will identify and present two research questions in the second contact session. During the presentation, the public health importance and feasibility to undertake the study will be considered by the faculty members. The scholars will explore the feasibility of these research questions during the second field posting. After discussion with the stakeholders and review of relevant literature, the scholars will prepare the dissertation protocol under the guidance of their mentors and present the protocol to the faculty for approval during the third contact session. The protocols will then be submitted to the Institutional Ethics Committee for approval.

The scholars will write the report about his/her dissertation in the format of a scientific manuscript of 3,500 words or less that uses the Introduction, Methods, Results and Discussion structure. The scholars would also review the relevant literature to allow using other evidence available to bridge results of an investigation with the recommendations made and submit it as an annexure to the dissertation.

4.4.2. Other field project reports: The scholars will write the reports for the surveillance data analysis, outbreak investigation and programme evaluation in the manuscript format and submit the final version along with data file. During the first week of the second contact session, the scholars will make a 15-minute presentation about the public health situation in their districts and submit the hard copy of their presentation.

4.5. Supervision and mentoring of the scholars:

Most of the scholars admitted to the course will be middle level health managers sponsored by the state health departments. Considering their special needs, supervision and mentoring by NIE faculty is the most critical component of this teaching/training programme both during the contact sessions and the field postings. Each NIE faculty member will mentor at least 2 scholars. During field placements, in addition to supervision by NIE faculty, the scholars will be offered immediate guidance at local level by experienced local preceptors identified by NIE. Further, an alumnus of the programme will be identified in the nearest locality and designated as local technical guide for the field projects.

4.6. Student evaluation

4.6.1. Attendance: Scholars are expected to attend the classes regularly. A minimum of 85% attendance will be required for the scholars to appear for the final evaluation of each course. Scholars who have less than 50% attendance in any course will not be eligible to appear for the examination and will have to re-appear for the course when the same is offered during the next

academic year. The scholar will have a maximum of three chances for passing a course. Scholars who wish to take maternity leave can apply for leave and will not have to pay the tuition fees for repeating the course.

4.6.2. Contact sessions: The assessment of the scholars will be a continuous process. For each course, scholars will be evaluated based on in-course assessment and/or end-course examination through a variety of methods such as in-class/take-home assignments, participation in discussions, seminar/journal club presentations, report writing and term-examinations. Distribution of the weightage for the in-course and end-course assessments will be decided by the individual faculty concerned and informed to the scholars at the beginning of each course.

4.6.3. Field postings:

A. Field project reports: During the field postings, scholars will be assessed based on the execution of the assigned field projects and the reports submitted for the same. Each project will be assessed by two NIE faculty members (one of which would be the mentor) using the checklists. Additional 10% marks will be awarded for the field project reports that are accepted for publication in scientific journals and/or presentation in scientific conferences during the course period.

B. Dissertation: Each dissertation will be evaluated by two external reviewers from the panel duly selected by NIE with the approval of SCTIMST. The scholars will also present the findings of their dissertation in the *viva-voce*, which will be conducted by an external examiner. The final grade for the dissertation will be the average of the grades given by the two external reviewers and the external examiner.

4.6.4. Grading: A six letter grading system, as described below will be used to assess the student's performance for all courses during the contact sessions and the field projects including the dissertation (Table-4).

Table 4: Grading system for the MPH (EHS)

Grade	Performance	Percentage	Grade points
A	Excellent	90% or more	4
B	Very good	80-89%	3.5
C	Good	70-79%	3
D	Average	60-69%	2.5
E	Satisfactory	50-59%	2
F	Fail	Below 50%	0

Calculation of Cumulative Grade Point Average (CGPA): CGPA is the weighted average of numerical values of grades with credits as weights and will be calculated using the following formula: {[Sum of (Credit X Grade point) for all courses and field projects]/60}
CGPA can be converted into percentage using the formula (CGPA x 100)/4.

4.6.5. Re-examination: In case of failure in any of the courses, one more chance will be given to reappear for examination within three months. If any candidate fails for the second time, the candidate will have to reappear for the course when the same is offered in subsequent academic years within a span of three years of his admission. In such instances, the candidate will have to obtain prior approval from the competent authority. The maximum grade that will be awarded for a re- examination will be limited to C.

4.6.6. Criteria for award of the MPH degree: The minimum for pass in each course and field projects including dissertation will be grade E. For the award of the MPH degree, the student must obtain a minimum of grade E in all the courses and field projects with a minimum CGPA of 2 in total.

4.7. Quality assurance: The quality of the training programme will be assured by:

- Documentation of the teaching/learning material;
- Use of peer-review to develop improved learning tools;
- On-going evaluation of the teaching by the scholars;
- Monitoring of the acquisition of the core competencies through mentoring
- Evaluation of all the field project reports with standardized checklists,
- Capacity building of the teaching faculty in pedagogic techniques
- Periodic review by SCTIMST/partners

4.8. Admission to the Programme

4.8.1. Course eligibility: Applicants fulfilling the following criteria will be eligible to apply for admission for the programme:

1. MBBS degree recognized by the Medical Council of India;
2. Three years experience in public health after MBBS;

3. Age up to 45 years as on the date of commencement of the course (i.e., 1 July each year). Relaxable by a maximum of five years for deserving candidates. SC/ST/OBC/PH candidates will be eligible for age relaxation as per Govt. of India rules.

4.8.2. Course fees: There will be no fee for the candidates sponsored by the state/central government departments/Armed Forces. For others, the course fee will be Rs. 1,00,000/- (Rs. One lakh only) payable at the beginning of the academic year. The fees will not be refunded under any circumstances.

4.8.3. Method of selection: A selection committee constituted by the SCTIMST will select the candidates based on (1) educational qualifications; (2) professional experience relevant to public health; (3) written test and/or (4) interview. Preference will be given to the candidates sponsored by the state /central/UT governments and Armed Forces.
The decision of the Director, SCTIMST will be final.

The selection committee will consist of:

- Director, SCTIMST (Chairperson)
- Nominee of the Secretary, Department of Health research/Director General, ICMR
- Director, NIE (Chairperson in the absence of Director, SCTIMST)
- The Registrar of SCTIMST
- Two faculty members from NIE
- One member to represent SC/ST category

4.8.4. Number of seats: A maximum of 30 scholars will be admitted in the programme in any academic year. However, the number of seats available in a given academic year will be based on the faculty strength at NIE so as to maintain the faculty: scholar ratio of 1:2.

SECTION-B

DETAILED COURSE CURRICULUM

Principles and Practice of Public Health

1. **Course overview:**

   This course is designed to introduce the scholars to the basic principles of public health, with emphasis on public health practices in India. It will cover the evolutionary history and the overall scope and functions of public health. The course will include discussion on the organizational aspects of the public health system and an overview of the major tools to practice public health.

2. **Course Objectives:**

   This course will provide the scholars with the basic concepts and tools for good public health practice.

3. **Course credits:** 0.5

4. **Teaching hours:** 20 hours

S.No	Topics	Learning objective	Theory session	
			Teaching method	Hours
1.	Public Health Concepts and Goals	To describe the evolution of public health principles	Lecture/audio-visual	1
2.	History and Development of Public Health		Lecture/audio-visual	2
3.	Determinants of Health	To understand the scope and functions of public health	Lecture	1.5
4.	Millennium Development Goals and India's National Health Policy		Lecture-discussion	1.5
5.	Health as Human Right		Lecture	1
6.	Ethical issues in public health		Lecture	1.5
7.	Environmental Health		Lecture/audio-visual	1.5
8.	Disaster management		Lecture	1.5
9.	Public health infrastructure and delivery system - district/state/ national (Government, Non-governmental, Panchayati Raj systems and Local bodies)	To comprehend the organizational structure and functioning of public health systems in India	Discussion	1
10.	Public health systems, Public health goals - understanding issues in governance		Lecture	1.5
11.	Data Sources for Public Health in India	To identify the application of basic tools of public health practice	Lecture	1
12.	Social Science techniques		Lecture	1
13.	Health Economics		Lecture	2
14.	Criteria to assess effective public health action		Lecture	1
15.	Legislative approaches to health promotion		Lecture	1
TOTAL				**20**

Epidemiology: Principles and Methods

1. Course overview

This course aims to equip scholars with the knowledge and skills to make valuable contributions to both epidemiological research and public health. The course deals with the methodology and basic concepts including measures of disease occurrence and association; study design; the role of bias and confounding in epidemiological studies.

2. Objectives: At the end the course, the scholars will be able to

- Explain the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues.
- Describe a public health problem in terms of magnitude, people, time, and place.
- Apply the basic terminology and definitions of epidemiology.
- Calculate basic epidemiology measures.
- Draw appropriate inferences from epidemiologic data.
- Evaluate the strengths and limitations of epidemiologic reports.
- Identify the principles and limitations of public health screening programs.

3. Course credits: 2.5

4. Teaching hours: 100 hours

Sl. No.	Topics	Learning objective	Theory session		Practical session	
			Teaching method	**Hrs**	**Teaching method**	**Hrs**
1	Introduction to epidemiology	Understand the evolution and application of epidemiologic principles	Lecture	2	--	
2	Aims and uses of epidemiology					
3	Causation and causal inference	Explain the evolution of concepts of causal inference	Lecture	3	Case study	2
			Assigned reading	2		
4	Measures of disease and death frequency	Calculate and interpret measures of disease/death frequency	Lecture	3	Class room exercise	2
					Take home assignment	2
5	Presentation of data	Present and interpret data in appropriate form	Lecture	3	Class room exercise	2
					Take home assignment	3
6	Types of epidemiological studies	Design descriptive, analytical and interventional studies	Lecture	15	-	
			Assigned readings	6		
7	Measures of association	Calculate and interpret measures of effect	Lecture	3	Class room exercise	3
					Case study	2
8	Screening	Apply valid screening tests	Lecture	5	Mini-module	2
9	Measures of impact	Calculate and interpret measures of impact	Lecture	3	Case study	3
					Take home assignment	2
10	Interaction	Identify an effect measure modifier	Lecture	4	Case study	3
					Class room exercise	3
11	Bias	Identify systematic errors in designing a study or analyzing data	Lecture	8	Class room exercise	6
					Take home assignment	2
12	Matching	Design studies using principles of matching	Lecture	3	Case study	3
TOTAL				**60**		**40**

Applied Epidemiology

1. Course overview

This course will enable the scholars to apply the epidemiology principles and methods. As a part of this course, the scholars will get hands-on experience in using the Epi-info software, conceptual foundations and practical skills for designing and implementing surveillance systems and for using surveillance data for the conduct and evaluation of public health programs and research. The scholars will learn to investigate the disease outbreak using the standard 10-step approach. They will also develop a research question, prepare the research protocol, understand the ethical issues in research and obtain the approval from ethics committee, collect and analyse the data and write a report.

2. Course objectives: At the end the course, the scholars will be able to

- Apply Epi-info software and interpret the outputs meaningfully
- Analyze the surveillance data and evaluate the surveillance system
- Investigate disease outbreak
- Comprehend the ethical principles pertaining to data collection, maintenance, use and dissemination of epidemiological data
- Plan appropriate study design for answering a particular research question

3. Course credits: 5

4. Teaching hours: 200 hours

Sl. No.	Topics	Learning objective	Theory session		Practical session		TOTAL
			Teaching method	Hrs	Teaching method	Hrs	
1	Epi-info	Use epi-info software for epidemiological analysis			Hands-on workshop	20	20
2	Disease surveillance	1. To manage and operationalise the disease surveillance system 2. Conduct basic time, place and person analysis of surveillance data	Lecture	15	Case study	6	44
					Epi-Maps	3	
		3. Use surveillance information for action			Hands on workshop	10	
		4. Describe and evaluate a surveillance system	Lecture	3	Case study	3	
					Preparing the evaluation matrix	4	
3	Outbreak investigations	1. To conceptualise and undertake epidemiologic and laboratory investigations of outbreaks 2. Understand and undertake appropriate measures for preparation and response to outbreaks	Lecture	12	Case study	10	28
					Lab. Demonstration	3	
					Visit to public health lab	4	
4	Advanced data analysis	Analyse the dataset using epi-info software and interpret the results			Hands on workshop	20	20
5	Ethics in bio-medical research	Understand ethical principles in bio-medical research	Lecture	4	Case study Preparing informed consent form	4	8
6	Field exercise	Plan appropriate study design for answering a particular research question					80
TOTAL							**200**

Bio-statistics

1. Overview of the course:

Biostatistics course is planned to demystify the subject of statistics by introducing basic statistical concepts and techniques relevant to epidemiology and public health. The course starts with a discussion on nature, type and presentation of data in tabular format including cross-tabulation, graphs and charts; descriptive statistics on central tendencies and dispersion of the data; introduction to the concept of chance/probability, distributions; statistical hypothesis and estimation; sampling and examples on probability samples; sample size estimation; concepts and definitions on correlation and simple linear regression; introduction to non-parametric test procedures; introduction to the concept on analysis of variance, multiple linear regression, logistic regression, time series and survival analysis.

2. Course objectives:

- On completion of the course, MPH scholars will be able to
- Use public health/epidemiologic data from qualitative and /or quantitative, discrete and continuous variables;
- Use appropriate tables, graphs, charts and diagrams to present the data;
- Compute proportions/means/medians/modes or ratios and variance;
- Compute area under the normal curve;
- Use random numbers to select a simple random sample, understand the concepts of other sampling procedures and compute appropriate sample size using formulae/software;
- Compute a simple linear correlation coefficient,
- Understand the concept of simple linear regression;
- Understand the utility of analysis of variance, multiple linear regression, standardization of rates and survival analysis

3. Credits: 2.5

4. Teaching hours: 100 hours

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1	Introduction to bio-statistics	Understand the role of bio-statistics in public health	Lecture	1.5		
2	Nature and Types of data Distributional pattern of a variable	Evidence of identifying variables for analysis	Lecture	6	Class room exercise	2
3	Measures of central tendency and dispersion	Evidence of computing and interpretation of mean, median and mode, variance in field projects	Lecture	3	Class room exercise	2
4	Introduction to probability and probability distributions	Evidence of understanding chance and the concept on discrete and continuous distributions	Lecture	7.5	Class room exercise	10
5	Statistical testing and confidence intervals	Evidence of statistical tests and / or confidence intervals conducted / calculated when needed and correctly in field reports	Lecture	7.5	Class room exercise	10
6	Introduction to non-parametric tests	Understanding the concept and using test procedures when dealing with small sample data sets	Lecture	1.5	Class room exercise	2
7	Correlation and regression	Evidence of understanding the concept on cause and effect relationship	Lecture	3	Class room exercise	4
8	Sampling methodology, including sample size estimation	Evidence of the use of a sample designed appropriately in one of the field reports and Evidence of a sample size calculation done appropriately in one of the field reports	Lecture	3	Class room exercise	4
9	Analysis of variance (ANOVA)	Evidence of identifying advanced statistical methods to analyze quantitative epidemiological data	Lecture	1.5	Class room exercise	2

10	Comparison of two standardized mortality ratios (SMRs) (Background, Direct and indirect standardization)	Understand the concept of standardization	Lecture	1.5	Class room exercise	2
11	Comparison of two standardized event ratios (SERs) (Background Direct and indirect standardization, Illustration, Discussion)	Understand the concept of standardization for event ratios	Lecture	1.5	Class room exercise	2
12	Logistic regression	Understand the concept and definition of logistic regression	Lecture	1.5	Class room exercise	2
13	Multiple linear regression (MLR)	Understand the concept on MLR and to know when to use what	Lecture	2	Class room exercise	2
14	Survival Analysis	Understand the concepts on hazard, cohort life tables and survival curve	Lecture	3	Class room exercise	2
15	Time Series (Background, types of series, fitting model for the trend, Test for the significance of the trend)	Understand the concept on time series data, types of time series, fitting time series data, test for auto correlation and relevance to forecasting	Lecture	3	Class room exercise	2
16	Sources of Demographic Data	Identify the different sources of data Describe the advantages and disadvantages of each source	Lecture	3	Class room exercise	2
TOTAL				**50**		**50**

Demography

1. Course overview:

This course introduces the basic elements of population studies including: population size, composition, and distribution, and the causes and consequences of changes in these characteristics. An overview of demographic processes and measures used to assess them is presented. Scholars will become familiar with the sources of data available for demographic research. Population composition and change measures will be presented. Measures of mortality and fertility patterns will be defined. Life table, standardization and population projection techniques will also be explored. The impact of population policies and programs on population change will be analysed for India.

2. Course Objectives: This course will make the scholars familiar with:

- The current status and trends in population size, composition and distribution, and the causes and consequences of changes in these characteristics.
- Basic measures used to assess demographic processes: fertility and mortality.
- Appropriate sources of data, basic demographic analyses using various techniques and their comparability across populations.
- Population projections and interpretation of the information gathered by the different demographic methods.
- Advantages and disadvantages of the different sources of demographic data.
- Techniques to ensure comparability of the measures across populations.
- Basic demographic indicators and their computation and interpretation.
- Population projection calculations and analysis.
- Population policy, its formulation and role in the future of India's demographic and health trends.

3. Course credits: 0.5

4. Teaching hours: 20 hrs

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1	Sources of demographic data	• Identify the sources of demographic data • Describe the advantages and disadvantages of each source	Lecture	3	Class room exercise	2
2	Population Change and Projection	• Estimate rates of change in populations • Calculate doubling time • Understand the relationship between age distribution and demographic rates and understand the balancing equation	Lecture	3	Class room exercise	4
		• Project a population and its age-sex composition using different assumptions and interpret the results • Evaluate different projections	Lecture	3	Class room exercise	2
3	Demographic transition	• India's population growth: • Demographic processes affecting population growth • Measuring Population growth • Compare and analyse the importance of different processes affecting population change • Define, calculate and differentiate between crude rate of natural increase and population growth rate • Define and distinguish features of population growth (demographic trends) in different time periods and different regions (in time and space) • Definition of 'demographic transition'	Lecture	6	Class room exercise	4
	Population Policies and Programs	• Key components of population policies • Evolution of population policies in India • Population policies: Post ICPD shifts • Population policies on mortality and morbidity • Policies on population redistribution • Policy process • Population policies: ethical issues	Lecture	6	Class room exercise	4
TOTAL				12		8

Health Systems

1. Course overview:

A good health system delivers quality services to all people, when and where they need them. A health system needs staff, funds, information, supplies, transport, communications and overall guidance and direction. This course will provide the scholars a broad knowledge and understanding of the concepts of the six building blocks of health systems.

2. Course objectives: At the end of the course, the scholars will be able to

- Discuss the policy process for improving health status of populations
- Identify main components and issues of the health system organization, financing and delivery of health services in India
- Apply the principles of management to programme planning & development, budgeting, managing public health programmes and evaluating public health interventions
- Discuss existing HR policies in Indian health system and develop approaches for effective management of human resources
- Understand the basic principles of health management information systems and interpret key findings from the information system for use by decision makers
- Describe rational use of drugs, vaccines and technologies for effective delivery of health services.

3. Course credits: 5

4. Teaching hours: 200

Six Pillars	Broad Topics	Specific areas under the broad topic	Hrs
Governance and Management	Health Policy	• Understanding health policy framework, National health policy , Health policies of various states	6
	Organization and Structure of Health System in India, with examples of few states	• Public sector, various levels of health system such as PHC, sec care and tertiary care, defence, railways, CGHS, ESIC. Private sector (for profit, not for profit), Examples of various state health systems	2
	PH laws	• Laws related to practice, clinical establishment act, regulatory councils, PNDT act, drugs and cosmetics act, consumer protection act, tobacco related legislations, Clinical trials related legislations	4
	Public Health Mgmt. and district health planning	• **Public health management:** Principles of management, organizational behaviour, HR mgt, strategic mgt, change mgt, systems thinking in mgt, managerial tools (epidemiologic/economic etc), Decision analysis and conflict management, Planning/Planning cycle, Managing contracts and partnerships, Supervisory skills • **District health planning:** Designing interventions, Determinants & Contributing Factors, Programme /Project: Implementation/Monitoring, Evaluation and future planning, Methods for evaluation, Parameters for evaluation, Intersectoral collaboration	52
Health financing and economics	Economics of health care	• Introduction to health economics • Economics Tools for Health Economics: Opportunity Cost, Simple Supply and Demand Model, Price Elasticity of Demand, Utility Functions, Market Structures, Gross Domestic Product and Inflation. • Demand for Medical Care and the factors influencing the Demand for Health Care • Production of Health Care and the factors affecting the Supply of Health Care • Market Structures: Information asymmetry and Supplier Induced Demand and the Role of Government • Costing and cost analysis • Cost-Benefit & Cost Effectiveness Analysis • Equity and Efficiency	18

Health financing and economics	Health care financing	• Alternative mechanisms for financing (tax based, insurance, vouchers, user fees), selective country experiences; • Fund Flow Statement: Sources of funding and • Disbursement of funds, • Types of cost: Direct and Indirect, recurring versus non-recurring, activity based costing. • Budgeting: Zero based Budgeting, central/state budgets and terminologies • Society and treasury fund flow • National Health Accounts • District Health Financing • Household expenditure: formal, informal payments	18
Human resources	HR management	• Planning (Skill mix) • staffing, recruitment, Job description • Motivation, • Retention • Conflict Management • Training • Performance appraisal	8
	HR Policy	• Civil service rules • Transfers • Categories of health workers • Paramedical, AYUSH doctors • Cross-practice • Quacks/informal providers • Incentives and dis-incentives • Medical education: all cadres, Curriculums • Human resource profile • Public health cadre	12
Service delivery	Health care delivery systems	• Actors in health care delivery (state, private including NGOs, army, railway, ESI, CGHS) • Purchase and procurement • Inventory management-Maintenance (buildings, equipments, transport) • transport and communication • health infrastructure • Referral and outreach systems • Public-Private partnership • Comparative Health Systems • Management units at district/state level	4
	NRHM	• Theoretical, operational and financial aspects of National rural health mission	4
	National health programs	• National programs	4
		• Reproductive and child health (See PP 35 for details)	20

Service delivery	Programme evaluation	• Programme evaluation using logic model approach	24
	Quality systems	• NABH, NABL, six sigma, ISO • Accreditation • Indian public health standards	4
Drugs and technology	Medicines and vaccines	• Rational use of medicines • Essential drug list • Generics versus patent drugs • Vaccine and Vaccine management • Drug inventory control • Estimating drug requirement • GMPs, GLPs • Drugs for ISM	3
	Pharmaceutical policy	• NPPA, drug price control	1
	Trade	• Trade and health technologies (TRIPPS, IPR)	1
	Health technology	• Medical devices/health technology assessment/mgt • Use and mis-use of newer technology • Telemedicine	3
Health information systems	HMIS and HMS	• Concepts and theory • HIS of the country/state • Routine data collection through the system • HMIS under NRHM	6
	Sources of information	• Primary and secondary health data, • Health surveys (NFHS/DLHS/NSSO/Annual health surveys)	2
	Data collection and reporting	• Assessing health information needs at the facility level • Methods of collecting information • Quality of information - Validation • Mobile based reporting • Electronic transfer of data	*
	Data management, analysis and dissemination	• Record maintenance & Documentation • Dissemination of information/feedback	**
	ICD classification of diseases	• Medical certification of deaths, ICD coding for hospitalizations	4
TOTAL			200

(Will be covered under *epidemiology and **principles and communication module)

Reproductive and child health

1. Course Overview

RCH services constitute a major portion of the public health services provided at the primary care level. The UNDP's Millennium Development Goal (MDGs) envisages a two third reduction in maternal and child mortality by the year 2015. The GoI and its states are signatories to these MDGs. Since all the scholars admitted to the MPH programme are doctors, they would have exposure to Obstetrics & Gynecology and Pediatrics at the undergraduate level. However this exposure would be more hospital oriented rather than community based. Further, scholars will be from both the govt. public health system as well as private/ non govt. stream. Therefore there is not only need to orient those from the non govt stream to the RCH concepts, goals, strategies, etc., but also to strengthen capacity of those from the govt. stream to providing quality RCH services and thus enable their states meet the UNDP,s and Govt. of India's Millennium development Goals for Maternal and Child Health. The Core Courses in RCH will impart training in the theoretical & practical aspects of RCH I & II, using didactic lectures, case studies, exercises, in class room,

2. Course Objectives: The overall objectives of the core course in RCH are to:

1. Strengthen capacity of scholars in the various aspects of RCH I & II as envisaged by World Bank and GOI.
2. Ensure Provision of Quality RCH services to the community at different levels of the Health system
3. Assist through strengthened capacity and quality services in improving the Reproductive and Child health status of the community

3. Course Credits: 0.5

4. Teaching hours: 20 hrs

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1	Overview : India's Health & Family Welfare programme, RCH I & II, and UN MDGs , India's population policy	Describe the genesis of the RCH programme	Lecture	1		
2	Adolescent Reproductive and Sexual Health (ARSH): Concepts, Burden, status indicators, strategies. Operational framework for adolescent sexual reproductive health Monitoring / evaluation of adolescent health care	Describe the problem of ARSH in their district Develop a plan to establish and evaluate ARSH services in their districts	Lecture	2	Class exercise on planning & evaluation of Adolescent Reproductive and Sexual Health services at district level	3
3	Integrated Management of Pregnancy and Childbirth including pregnancy complications Essential Obstetric and Newborn Care BEmONC services	List the various "High Risk" complications of pregnancy Develop a plan to Evaluate BEmONC Centers in their districts	Lecture	2	Class Exercise: Evaluating BEmONC & CEmONC centers at district level	2
4	Maternal Mortality : Status, Audits, Verbal Autopsies Protocols for managing pregnancy complication Emergency Obstetric and Newborn Care CEmONC services	Apply the protocols for managing high risk pregnancy Develop a plan to assess CEmONC services in their districts	Lecture	2	Class Exercise on verbal autopsies for establishing cause of death for maternal deaths	2
5	Infant mortality : status, determinants, audits, verbal autopsies Specialised intensive Newborn/ Neonatal care units	List the causes and determinants of infant mortality in their districts Use verbal autopsy instruments to arrive at causes of infant deaths	Lecture	1	Class exercise on verbal autopsies for establishing cause of death for infant deaths	2

6	Reproductive tract Infections (RTIs), Cervical and Breast cancers: Problem and Screening techniques	List the various causes and determinants of RTIs	Lecture	2	Video demonstration of Screening for Cervical neoplasia through VIA, and VILI	1
TOTAL				**10**		**10**

Social and Behavioural Sciences

1. Overview of the course:

The curriculum for Social and behavioural Sciences is divided into following 5 modules:

- Basic principles of Social and Behavioural Sciences
- Health culture in India and Planning process for the development of public health programme
- Culture, health and disease
- Specific research methods in social and behavioural sciences
- Plural systems of medicine

2. Course objectives:

- Understand basic concepts in Social-Behavioural Sciences in order to identify behavioural patterns of people about health issues. This knowledge would be useful towards planning and implementation of public health programme, addressing the concerns of people.

- To get good grasp about health culture in India. This will help in understanding the basis of planning for program of health and development.

- Understand public health as an integral aspect of Indian Culture and Society, in traditional and dynamic processes of change, and factors impeding change.

- Develop critical faculty of inquiring mind to ask the question, "Why"? through understanding specific research methods in social-behavioural sciences.

- Recognize and appreciate the functioning of medical pluralism in India in tune with cultural similarities and diversities

3. Credits: 1.5

4. Teaching hours: 60 hrs

Module I : Basic Principles of Social and Behavioral sciences

S.No.	Topics	Learning objective	Theory session		Practical sessions
			Teaching method	Hrs	Teaching method
1.	**What are social, cultural and behavioral sciences? Their basic principles.** Sociology, Anthropology– Biological, Social-Medical, Psychology-Clinical, Social, Economics, Political Science and Public Administration, History, Philosophy (morals and ethics), human geography	Understand basic principles and key concepts in social and behavioural sciences	Lecture	2	
2.	Concept of culture, integration of culture, patterns of culture, culture relativism, enculturation, culture changes. Health as an aspect of culture , Anthropology in medicine and public health.	Understand the role of culture and anthropology, and their influence on health	Lecture	2	**Take home Assignment:** "Public Health as a Social Science"
3.	**Other concepts:** Status and Role (healer, sick role) Concept of Health (social sciences perspective), Attitudes and Beliefs, Concept of Development, Health & Development		Lecture	2	
4.	**Psychology:** Personality, culture and personality – Basic personality configuration. Clinical psychology and social behavior.	Understand personality, culture, health and social behaviour	Lecture	2	
5.	**Attitude and Health Behaviour** Functional approach of studying attitude, Attitude change: theories and its application Process of opinion change, Attitude mapping	Know the role and influence of attitude	Lecture and Class room demonstration	2	
TOTAL				10	

Module II Health Culture in India and planning process for the development of public health programmes

S.No.	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1.	**Health Culture in India** Traditional medical system and professionals Little tradition: Herbalists, TBA-Dai, Vaidu/Bhagat, home remedies, Great traditions: Textual classics of Charak, Susrut, Vaghbhat. Texts in Unani, Sidha	Understand various systems of remedies and their influence on health	Lecture	2	Class room seminar on **"Traditional practices in RCH and infant care"**	3
2.	**Constitutional provisions for egalitarian society** Fundamental rights and Directive principles with focus on state responsibilities in health and nutrition	Understand the planning process for development of India	Lecture	2		
3.	Principle of equity and equality of opportunity: Positive discrimination/affirmation/ reservation in favour of disadvantaged groups: S.C, S.T, OBC, women disabled: Implication in public health		Lecture	2		
4.	Regional disparities and disparities within social groups: special component plans for S.C. and tribal sub-plan: Mi-day meal prog.,Anganwadi, Ashram schools. Social justice and empowerment for disadvantaged groups		Lecture	2		
5.	Panchayati Raj at district, taluk and village levels: Health committees NGOs and CBOS. Mahila Mandal, Youth Groups, Self Help Groups (SHG)		Lecture	2	**Case study** Panchayati Raj at district, taluk and village levels	2
TOTAL				**10**		**2**

Module III. Culture, health and disease

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1.	**Culture, health and disease** Cultural dimensions of health and diseases, Cultural belief, behaviour and health	Understand the relationship between social sciences and epidemiology	Lecture	2		
2.	**Health Seeking Behaviour:** Model & Theories, Health seeking and treatment seeking behaviour		Lecture	2		
3.	**Emerging Social challenges in Health: Critical analysis** 1. Human rights and health, 2. Health and ageing		Lecture	2	**Case study** Psycho-social problems related to Geriatric people	**2**
4.	**Social, cultural factors in specific health and disease management issues –** HIV/AIDS, adolescent health, leprosy, TB, malaria	Understand and take into account the social and cultural factors in specific health and disease management areas	Seminar	3	**<u>Take home assignment</u>** 1. Design health education and IEC messages and pamphlet for (any 2 diseases) HIV/ Malaria/dengue/ Chikungunya to answer FAQ or concerns of people 2.Make a list of risk behaviour about getting HIV from 50 young men in the age group of 18-30 years	
5.	Disability and rehabilitation, social stigma		Lecture	2		
6.	Diabetes, Cancer, Road accidents, Azheimers & paralysis			2		
7.	**Behavioural change** Mass media and interpersonal communication Role of opinion leaders, political leaders, kin group and neighbour-hood group Doctor patient, Health worker/ Social worker-Client, Peer Group communication	Understand and appreciate the value of behaviour change in public health	Lecture	2		
8.	**Behavioural change** Role of counseling at individual and community level		Lecture and role play	2		
TOTAL				**17**		**2**

Module IV. Specific research methods in socio-cultural and behavioural sciences

S.No.	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1.	**Socio-cultural and behavioral research** Emic and Etic perspectives in Health on Social Science research	Understand specific social science research methods	Lecture	2	**<u>Take home assignment</u>** Prepare a research proposal in ICSSR format to study community perception about causation and treatment of HIV/AIDS	
2.	Social scientists as a member of public health Research Team – Planning, implementation, monitoring and evaluation	Apply these methods for social science research in public health	Lecture	2		
3.	**Organizing Communities: Theories and models** ➢ Understanding the community, Working with communities ➢ Community diagnosis, PLA		Lecture	2		
4.	➢ Community orientation of health and diseases ➢ Social mapping, Goniometry, sociogram, triangulation		Lecture	2	**<u>Class room assignment</u>** Prepare an interview schedule to study perceptions and practices of diabetic patients	**2**
5.	Social mobilization, community participation **Preparing action plan for various interventions in the community;** Assessment of f health education activity		Lecture	2		
TOTAL				**10**		**2**

<u>Module V.</u> Plural systems of medicine

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	**Hrs**	**Teaching method**	**Hrs**
1.	Historical development of medical pluralism in India: Ancient India, Medieval times, pre and post Independence * Basic principles of AYUSH system: Their congruence and diversions * Medical education in plural system	Recognize and appreciate the functioning of medical pluralism in India in tune with cultural similarities and diversities	Lecture	3	**Observe** plural systems in CGHS and other Govt. dispensaries and to submit a report	
2.	* Role of plural systems in national health care with focus on women and child health, adolescent and geriatric health care and promotion		Lecture	2	Class room assignment on "Role of plural systems care among adolescent and geriatric populations	**2**
TOTAL				**5**		**2**

Epidemiology of Infectious Diseases

1. Course overview

This course is designed to provide the scholars with the global and Indian perspectives on burden of infectious diseases with emphasis on endemic diseases posing as major public health problems. It will cover the notions behind specific characteristics and terminology of infectious disease epidemiology, concepts of transmission dynamics, methods of outbreak investigation and control, and principles of disease prevention and control. The latter half of the course will focus on special topics in the field including elimination and eradication of diseases, emerging/re-emerging infections and bioterrorism.

2. Course Objectives: This course will make the scholars familiar with:

- epidemiologic concepts and methods specific to infectious diseases
- rationale for prevention and control of infectious diseases
- holistic perspective to disease occurrence, prevention and control

3. **Course credit:** 1

4. Teaching hours: 40 hours

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1	Origin and Burden of Infectious Diseases	Know and estimate the burden of infectious diseases	Lecture	1	Audio-visual	1.5
2	Dynamics of transmission of infectious diseases (Epidemiologic triad, Modes of Transmission, Reservoir, Host defence)	Identify the principles and elements of transmission of infectious diseases involved in prevention and health promotion	Lecture	1.5		
3	Properties of infectious agents		Lecture	1		
4	Modelling of Infectious Disease Transmission	Know and understand infectious disease modelling	Lecture	1	Demonstration of software	0.5
5	Natural history of disease (Gradient of infection and spectrum of disease - Latent period, Incubation period, Communicable period)	Understand disease progression and apply for effective and timely control of disease	Lecture	1.5		
6	Describing the occurrence of infectious diseases (Endemic, epidemic (outbreaks), pandemic; Epidemic curves)	Estimate and present epidemiologic measures of disease occurrence	Lecture	1.5	Mini-module – Constructing and interpreting an epidemic curve	1.5
7	Biohazard, bio safety and biosecurity	Know and apply good laboratory practices and work with laboratory	Lecture	2	Lab demonstration	1
8	Basic principles of control measures for infectious diseases, including vaccinology	Know and identify the methods for prevention and control of infectious diseases at the individual and population level	Lecture	2		

9	Epidemiology, prevention and control of tuberculosis/ Influenza	Understand the epidemiology and the rationale for emergence, prevention and control of infectious diseases	Lecture	2		
10	Epidemiology, and control of Leprosy		Lecture	1.5		
11	Infections as risk factors for chronic NCD		Lecture	1		
12	Epidemiology, prevention and control of of HIV/AIDS/STIs		Lecture	2	Audio-visual	1
13	Epidemiology, prevention and control of Vector-borne ds		Lecture	2	Lab/field demonstrations	1
14	Epidemiology, prevention and control of neglected tropical diseases		Lecture	1		
15	Epidemiology, prevention and control of diarrhoeal diseases		Lecture	2		
16	Epidemiology, prevention and control of Hepatitis		Lecture	1		
17	Epidemiology of Vaccine Preventable Diseases				Student seminar	3
18	Emerging and Re-emerging Infectious Diseases		Lecture	1.5	Audio-visual	1
19	Bioterrorism	Know and identify the tools and effects of bioterrorism			Student seminar	1
20	Elimination and eradication of diseases	Comprehend the concepts and approaches to disease elimination and eradication	Lecture	1.5	Audio-visual	1.5
TOTAL				**27**		**13**

Chronic (non-communicable) diseases and Injury Epidemiology

1. Overview of the course

This course is designed to familiarize the scholars with the global and Indian perspectives on epidemiology of chronic diseases and injuries. Course will help develop skills in designing chronic disease intervention programs.

2. Objectives of the course

- Understand burden and epidemiology of chronic diseases of public health importance
- Design surveillance for non-communicable disease risk factors
- Design interventions for cardiovascular disease prevention and cancer cervix at the community level
- Understand existing national programs for chronic diseases

3. Credit: 1

4. Teaching hours: 40 hrs

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1	Burden of Chronic disease Preventing Chronic Disease	Understand the burden of chronic disease in global and Indian context	Lecture	1	Assigned reading	1
2	Risk factors for NCD- WHO STEPS approach and IDSP survey	Conduct NCD risk factor survey as per WHO-STEPS approach	Lecture	1	Questionnaire/anthropometry/blood pressure measurement exercise	3
3	Chronic Disease epidemiology in Indian context: Ischemic Heart Disease, Stroke, Obesity, Metabolic Syndrome, Hypertension, Diabetes, Chronic Kidney disease, Osteoporosis	Understand the epidemiology of chronic diseases of public health importance in Indian context	Lecture	3	Data analysis exercise Seminar	5
4	Approaches to interventions in Chronic (Non-Communicable Diseases) diseases and designing cardiovascular prevention program	Design cardiovascular prevention program for the district	Lecture	1	Group discussion Assignment: design cardiovascular prevention program	5
5	Epidemiology of mental health disorders, National/district mental health program, community outreach interventions and stigma interventions	Understand epidemiology of mental health disorders and national program	Lecture	4	Group discussion	1

6	Epidemiology of Road traffic Accidents, Road safety and accident prevention, Injury Surveillance program, Suicide Epidemiology and interventions	Understand injury epidemiology Design injury surveillance program for the district	Lecture	3	Exercise	2
7	Tobacco control: principles National tobacco control program Legislations for tobacco control	Understand principles of tobacco control and framework for implementing national program	Lecture	1	Online module (self learning)	
8	Epidemiology of cancers in India, Design Cancer cervix screening program, epidemiological measures of cancer, principles of cancer registration	Understand cancer epidemiology and national programs for cancers Design cancer cervix screening program for the district	Lecture	5	Field visit Exercise	4
TOTAL				**19**		**21**

Media, advocacy and communication

1. Overview of the course:

All public health professionals are expected to communicate with different groups and levels of people to convey different types of messages. Very few however have exposure to / formal training in the concepts and techniques of communication. Hence, a core course in communication would bridge existing gaps in this area. This Course on Health Communications would include theoretical and practical sessions on the arts and science of communicating with media, community, professional peers, politicians, bureaucrats, etc. both verbally and in writing.

2. Objectives of the course

1. Craft health messages and communicate to the community
2. Present scientific work before a scientific / professional audience at national and international conferences
3. Publish scientific work in scientific, peer reviewed journals
4. Communicate key scientific findings with policy makers
5. Position media (Print/TV/Radio/Cinema) in strategic communication loop
6. Craft and communicate public health news/messages through news media

3. Credits: 1.5

4. Teaching hours : 60 hrs

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
Health communication with community						
1	Introduction to Health education- concepts, role, definitions, principles	Familiarize with various basic principles of health education	Lecture	1		
2	Introduction to Health communication- types of health communication, message formation, types of media, media preparation and communication barriers	Acquire skills in preparing and delivering health message	Lecture	1	Role play in the field Drawing and writing health message	5
3	Planning a health communication program- Steps in planning, Goal, Objective etc. Needs analysis, Audience analysis Preparation of aids	Acquire skills in planning and preparing appropriate audio-visual aids for health communication program	Lecture	1	Group discussion Demonstration of various aids e.g. flip chart, information brochure	4
4	Methods in Health Education-Traditional and contemporary media for mass communication		Lecture	1	Mock play in classroom	3
5	Success and failures of different methods (barriers, audience, inappropriate message or media, community participation)		Lecture	1	Group discussion based on mock play and role play	1

6	Adult learning principals		Lecture	1		
7	Inter personal communication & Behavioral change communication		Lecture	1		
Written and oral scientific communication						
8	Writing a draft manuscript, writing an abstract and Revising manuscript	Write draft manuscript	Lecture	4	Class room exercise	10
9	Writing policy brief to communicate to policy makers	Write policy brief		1		3
10	Oral scientific communication: Preparing for talk, delivering talk, preparing audio-visuals aids	Deliver scientific presentation	Lecture	4		
Communication through media						
11	Types of media Fundamentals of news media Role of news media in public health Soft skills for handling media	Position news media in strategic communication loop Mange unwanted publicity/do damage control	Lecture	2		
Communication through media						
12	Preparing message for print media, writing press release, Preparing message and handling TV/radio media	Craft health message for news media, adapt the message for various target groups and communicate message to news media professionals	Lecture	1	Press release writing exercise Role play for TV/Radio/print media	4

13	Organizing Press conference Preparation of press kit	Engage news media in a public health communication programs	Lecture	1		
14	Role of cinema in public health, Health portrayals in cinema, using cinema in IEC programs, identifying positive health messages and using them to effectively to communicate to public	Position cinema/movies in strategic communication loop	Lecture	2	Demonstration of health portrayals/ IEC messages in Cinema/movies	3
Using newer technologies for communication in public health						
15	Available technologies for communication Improve the outreach of messages using technology	Understand the role of technologies in public health communication	Lecture	2	Field visit	3
TOTAL				**24**		**36**

Public Health Nutrition

1. Course Overview

This course is designed to provide the scholars with the global and Indian perspectives on methods in public health nutrition, epidemiology of nutrition related public health problems and public health interventions for these problems.

2. Course Objectives: The objectives of this course are to:

- Sensitize scholars on various issues pertaining to Public Health Nutrition including: epidemiology of nutritional problems of public health importance and India's Nutrition policy, goals and National nutrition programmes.
- Build Anthropometry related skills in scholars through instructions in nutrition assessment methods
- Strengthen the capacity to plan and carry out nutrition surveys through training in epidemiological study designs for Nutrition Research

3. Credit: 0.5

4. Teaching hours: 20 hrs

S.No	Topics	Learning objective	Theory session		Practical sessions	
			Teaching method	Hrs	Teaching method	Hrs
1	Nutrition problems in India	Describe nutrition problems in India	Lecture	2		
2	Maternal malnutrition, pregnancy outcome and Infant nutrition	List magnitude and causes of maternal and infant malnutrition	Lecture	1		
3	Epidemiology of malnutrition Macronutrient malnutrition: PEM Micronutrient malnutrition: Strategies for prevention and control:	Describe magnitude and determinants of macro & micronutrient malnutrition	Lecture	2		
4	Epidemiology and dietary risk factors for overweight, obesity and NCDs	Describe magnitude and list dietary risk factors for overweight, obesity and NCDs	Lecture	1		
5	India's National Nutrition Policy and programmes for prevention/control of nutrition related problems	Describe India's National Nutrition related public health programmes	Lecture	1		
6	GM food and food fortification	List various GM foods and describe food fortification methods	Lecture	1		
7	Food safety and prevention of food adulteration act (PFA act)	Describe food safety measures	Lecture	1		

8	Anthropometric indices and WHO new child growth standards	Carry out anthropometric measurements	Lecture	1	Demonstration and field visit	4
9	Nutrition survey, contents and methodology	Describe the principles and methods for conduction nutrition/diet surveys	Lecture	1		
10	Diet survey methodology	Plan a nutrition/diet survey	Lecture	1	Practical exercise in planning a diet survey	4
TOTAL				**12**		**8**

Occupational and environmental health

1. Course overview:

The course on Occupational and Environmental Health (OEH) provides a broader perspective on general principles of occupational and environmental health, with emphasis on applications and public health implications.

2. Course objectives

1. Describe ecological and safety effects of major environmental and occupational agents
2. Explain general mechanisms of toxicity related to environmental exposures
3. Describe environmental and occupational diseases, their distribution and determinants
4. Describe regulatory programs and policies in context of environmental health issues in India
5. Apply principles of epidemiology, biostatistics and environmental monitoring for designing environmental health related studies
6. Appreciate the importance of maintaining healthy environment

3. Course credit: 0.5

4. Teaching hours: 20 hours

Sl. No.	Topics	Learning objective	Time (hrs)
1.	**Introduction to environmental health** • Burden of disease attributable to major environmental risk factors • Impact of environment on health • MDG and environmental risk factors • Environmental attributable fraction by disease • Environmental disease burden by regions • Preventing disease through healthy environment • The environment-Development-Health Interface • Historical perspective • Measuring environmental quality, Human exposure and health impact • Impact of environmental factors on health • Link between occupational and environmental health • Obstacles to and opportunities for resolving environmental health problems	Sensitize and introduce concepts of environmental risks and its impact on health	3.5
2	**Introduction to environmental health hazards** • Water and environmental sanitation • Air pollution • Heavy metals • Pesticides and persistent organic pollutants • Solid and hazardous waste, hospital waste management • GHGs and climate change related pollutants • Role of environmental health professionals in public health	To understand types of environmental hazards and associated health problems	4
3	**Introduction to Environmental Toxicology** • Introduction to principles of toxicology • Systemic toxicology of selected chemicals • Fundamentals of genetic toxicity, mutagenesis/ carcinogenesis and reproductive toxicology • Dose-response calculations • Regulatory toxicology	To understand the principles and fundamentals of environmental toxicology	3
4	**Overview of industrial/occupational safety** • Hazard identification and risk assessment process • Recognition evaluation and control of occupational hazards • Types of hazards: Chemical, Physical, Biological, Ergonomic and psychological hazards • Introduction to industrial safety • Industrial accidents • Health & safety management principles	Identification of industrial/ occupational health Hazards and control measures	2.5

5	**Occupational Safety and health in global/India context** • Rationale of OSH • Stakeholders of OSH • Role of OH professionals • The Global agenda (ILO, WHO) • The Indian agenda (Five Year Plan) • Overview of occupational safety and health hazards • Overview of common occupational diseases • Status of occupational health in the World and in India • Ethics and code of good practices	To acquire awareness regarding the different stake holders in OSH and understand the roles of OSH professionals and awareness on Occupational disease, its distribution and determinants	1
6	**Environmental Epidemiology methods** • Linking occupational and environmental epidemiology • Association and causation in Environmental Epidemiology and designing environmental epi studies • Biological markers of exposure • Environmental risk assessment	Apply principles of epidemiology, biostatistics and environmental monitoring for designing environmental health related studies	3
7	**Monitoring and Control of Environmental Health Hazards** • Air quality monitoring and control • Water quality monitoring and control • Soil and other media monitoring and control • Biological monitoring	To create awareness regarding monitoring and control of environmental health hazards	1.5
8	**Environmental and occupational Standards and Regulation** • Environmental health policy • Environment protection act • The National Environment Tribunal act • The National environment appellate authority act • Water and sanitation act • Air act • The Public liability insurance act • Overview of legal framework of OSH in India • Factories Act, 1948 and other important legislations • International standards and ILO conventions • WHO Healthy Worker Agenda	To acquire knowledge on environmental standards and regulations recommended in India and Internationally.	1.5
TOTAL			**20**