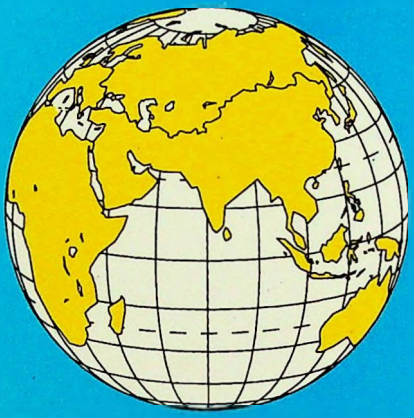
National Institute of Epidemiology

(Indian Council of Medical Research)

Chennai - 31



Board of Studies Document

for

Field Epidemiology Training Programme - Master of Applied Epidemiology

भारतीय आयुर्विज्ञान अनुसंधान परिषद्
INDIAN COUNCIL OF MEDICAL RESEARCH
NEW DELHI
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Field Epidemiology Training Programme

Master of Applied Epidemiology

May 2002

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Field Epidemiology Training Programme - An Introduction

Field Epidemiology Training Programme (FETP) helps in developing a country's public health capability with the primary goal of fostering professional development of field trained epidemiologists who are competent in the practical application of epidemiologic methods to a wide range of contemporary public health problems. FETP focuses on developing competencies that are consistent with national needs and priorities. The model for the training is learning by doing.

In 1951, Epidemic Intelligence Service (EIS), a two-year training programme in Applied Epidemiology was established at Centers for Disease Control and Prevention (CDC) Atlanta, USA. This was the beginning of the FETP. One more training activity at the international level is devoted to public health and named as Public Health Schools Without Walls (PHSWOW). PHSWOWs were initially conceptualized by the Rockefeller Foundation (RF) for developing countries to meet needs for public health human resources in an apprenticeship model. Early on, the RF collaborated with CDC in the implementation of PHSWOWs and used EIS and FETP graduates to start PHSWOW programmes. Training programs in Epidemiology and Public Health Interventions NETwork (TEPHINET) was established in 1997 under the auspices of World Health Organisation's (WHO) Division of Communicable Disease Surveillance and Response, CDC, USA and the Merieux Foundation. FETPs now operate in 40 different countries. FETPs network through various formal and informal activities of TEPHINET. FETP scientific annual conferences have served as forum for the individual and corporate voices in the network.

Field Epidemiology Training Programme in India

National Institute of Communicable Diseases (NICD), New Delhi, has been conducting 3-month courses on FETP as a regular feature. This is an international course with some limited number of slots available for Indian participants. In this course, during this 3-month period, participants gain the basic knowledge on epidemiology, surveillance and related areas.

NICD and National Institute of Epidemiology (NIE), Chennai also conduct a 10-day course on 'Epidemic Preparedness and Response'. During this course, participants learn surveillance activities, identification of epidemics, preparations for undertaking quick investigations and control strategies. These courses are being organized at WHO South East Asia Regional levels in India.

Both these courses provide exposure and basic inputs in applied epidemiology. FETPs generally are 2-year courses aimed at producing professional applied epidemiologists.

For a country of the size of India, the actual number of applied epidemiologists required even at district level and upwards would be around a minimum of 1000. It is impossible at this stage to provide 2-year training for these types of candidates in a short time. One can think of a pyramidal structure:

a) Short courses for medical and paramedical staff in epidemiology with focus on surveillance, epidemic preparedness & response
b) A 3-month course for district level officers to be taken up according to regions.
c) A 2-year FETP for producing epidemiologists at higher level, with necessary theoretical background and practical experience.

Government of India (Go I) and Indian Council of Medical Research (ICMR) have seriously considered these issues. In view of this, the 2-year FETP

course has been taken up by NIE with full support from ICMR and Go I and funding from WHO and support from CDC, USA.

In September 1999, it was decided that WHO would provide expert services to help NIE - ICMR in initiating the proposal on 2-year FETP course. Dr. Mahomed Patel an expert epidemiologist and the then Chair, TEPHINET visited India in October 1999. Dr. Patel had extensive discussions at ICMR Head Quarters, Ministry of Health, and South East Asia Regional Office (SEARO), WHO, New Delhi. He visited NIE, Chennai; inspected the facilities available at NIE and around; discussed extensively with the staff members at NIE and was convinced about NIE's ability to start 2-year FETP course with one year of preparation. He provided extensive materials on the ongoingMaster of Applied Epidemiology (MAE) course at the Australian National University (ANU) to NIE. Subsequently, Prof. M.D. Gupte, Director, NIE visited CDC, USA and had discussions with Dr. Mark White, Dr. Stephen Blount and various other important personnel. Dr. Mark White provided very useful material to initiate 2-year FETP course and promised technical support.

University affiliation and recognition

The FETP course is recognized for the award of the Master of Applied Epidemiology (MAE)degree by Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Thiruvananthapuram. A two-member team consisting of Dr. K.R. Thankappan, Associate Professor, Achutha Menon Centre for Health Science Studies (AMCHSS) and Dr. A.V. George, Registrar, SCTIMST visited NIE, Chennai on 20th and 21st July 2000. The purpose of their visit was to finalise the details of curriculum, method of evaluation and the financial implications of the FETP-MAE course.

The team had detailed discussions with several officers of the Institute regarding various research and training activities carried out at the Institute. They also visited the field practice area.

The two officers had a detailed discussion on the working arrangements, faculty positions, visiting faculty, curriculum content as well as on the financial aspects of the course with the then Epidemiology and Communicable Diseases (ECD) Division Chief, Dr. Lalit Kant from ICMR and Prof. M.D. Gupte.

The team expressed happiness and satisfaction on the available facilities at the Institute and expressed confidence that the course could commence from 1st January 2001. A detailed flow-chart of activities, viz., broad curriculum, assessment procedures and the draft of information brochure for the academic session 2001 were developed. It was recommended that the first batch of FETP-MAE course would commence on 1st January 2001.

Memorandum of understanding

A memorandum of understanding between SCTIMST and NIE-ICMR was signed to formalize the affiliation of FETP course at NIE for award of the MAE degree.

Curriculum development workshop

A curriculum development workshop was organized on 11th and 12th December 2000. The main objectives were to develop and fine tune the course syllabus for the 2-year FETP-MAE programme as well as identify potential external faculty. Details of course content, teaching methodology and evaluation were also discussed and finalised.

Course inauguration and commencement

The FETP-MAE course was formally inaugurated on 21st January 2001. Eminent dignitaries graced the occasion. They included: Prof. K. Mohandas, Director, SCTIMST, Thiruvananthapuram, Prof. N.K. Ganguly, Director - General, ICMR, New Delhi, Prof. D.K. Sampath, Member, Ethical Committee,

NIE, Prof. L.M. Nath, Consultant, WHO-India, New Delhi, and Dr. R. Ayyathurai, the then Director of Public Health and Preventive Medicine, Govt. of Tamil Nadu. Felicitations for the FETP in India were received from CDC, USA, ANU, Australia, various ICMR institutes, and WHO - SEARO, New Delhi. The FETP-MAE course commenced at NIE on 22nd January 2001.

Goal of FETP-MAE Programme in India

The primary goal of the FETP-MAE 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.

FETP-MAE programme objectives

To achieve the above goal, the FETP-MAE programme aims to develop a wide range of competencies in the core areas detailed below:

(i) Epidemiologic Process

Carryout a situation analysis of the public health problems, needs and priorities
Recognize the onset and investigate acute outbreaks
Design and conduct scientific investigations to test hypothesis
Estimate burden of disease – both communicable and non-communicable diseases
Develop, establish and evaluate comprehensive, reliable and sensitive disease surveillance systems
Evaluation of disease control programmes
Integration and application of epidemiologic, statistical and computer resources appropriately and optimally
Carry out literature search and critical review of journal articles of public health importance.

(ii) Management

- Identify and address public health priorities and needs
- Efficient allocation and optimal utilization of available resources
- Manage efficiently the administrative aspects of field activities
- Efficient and effective management of public health programmes

(iii) Communications

- Prepare investigative study proposals in clear and concise manner
- Maintain accurate, adequate and upto date records of activities and events
- Information dissemination to all concerned regarding critical events in a diplomatic and judicious manner
- Deliver verbal and written reports of critical public health events and activities
- Assist and strengthen training programmes in public health at local and district levels

(iv) Professionalism

- Execute public health responsibilities focusing on quality of care and high degree of professionalism in all phases of activities
- Respond promptly to public health needs and priorities while simultaneously maintaining professsional integrity and safeguarding moral and ethical issues
- Display professional judgment in decision making and action initiation while addressing public health needs and priorities
- Exude and enlist public confidence by maintaining a calm and composed disposition during stressful conditions

Number of Scholars to be admetted per year

Up to 10 scholars will be selected per year.

Course eligibility

Applicants fulfilling the following criteria are eligible to apply for the course:

(a) MBBS degree recognized by the Medical Council of India

(b) Working in Public Health, preferably in State or Central service or in Medical Institutions, sponsored on deputation for two years on a full- time basis to NIE

(c) Three years experience in public health/surveillance activities after MBBS

(d) Age below 45 years as on the date of commencement of the course (i.e. 1st of January). May be relaxed by 5 years for applicants with desirable experience

Selection of Scholars

(a) Selection Committee:

FETP scholars will be selected by a Committee constituted and approved by the Director of SCTIMST. The Committee will consist of:

(1) The Director of SCTIMST (Chairman)

(2) Director, NIE (who would act as Chairman in the absence of Director, SCTIMST)

(3) The Registrar of SCTIMST

(4) Two faculty members from NIE

(b) Course Announcement / Advertisement:

State and central governments and medical institutions would be contacted to depute eligible candidates for the course. At present, the course announcement appears in leading news papers in the month of September.

(c) Selection Process:

Since this is a new development in the country, in the first few years it is possible that we may not get adequate number of candidates, thereby

necessitating acceptance of all eligible applicants sponsored by different agencies in the country. However, as the course becomes known, we may have more applicants than we can accommodate. In such a situation, we may have to go through a formal selection procedure as detailed below:

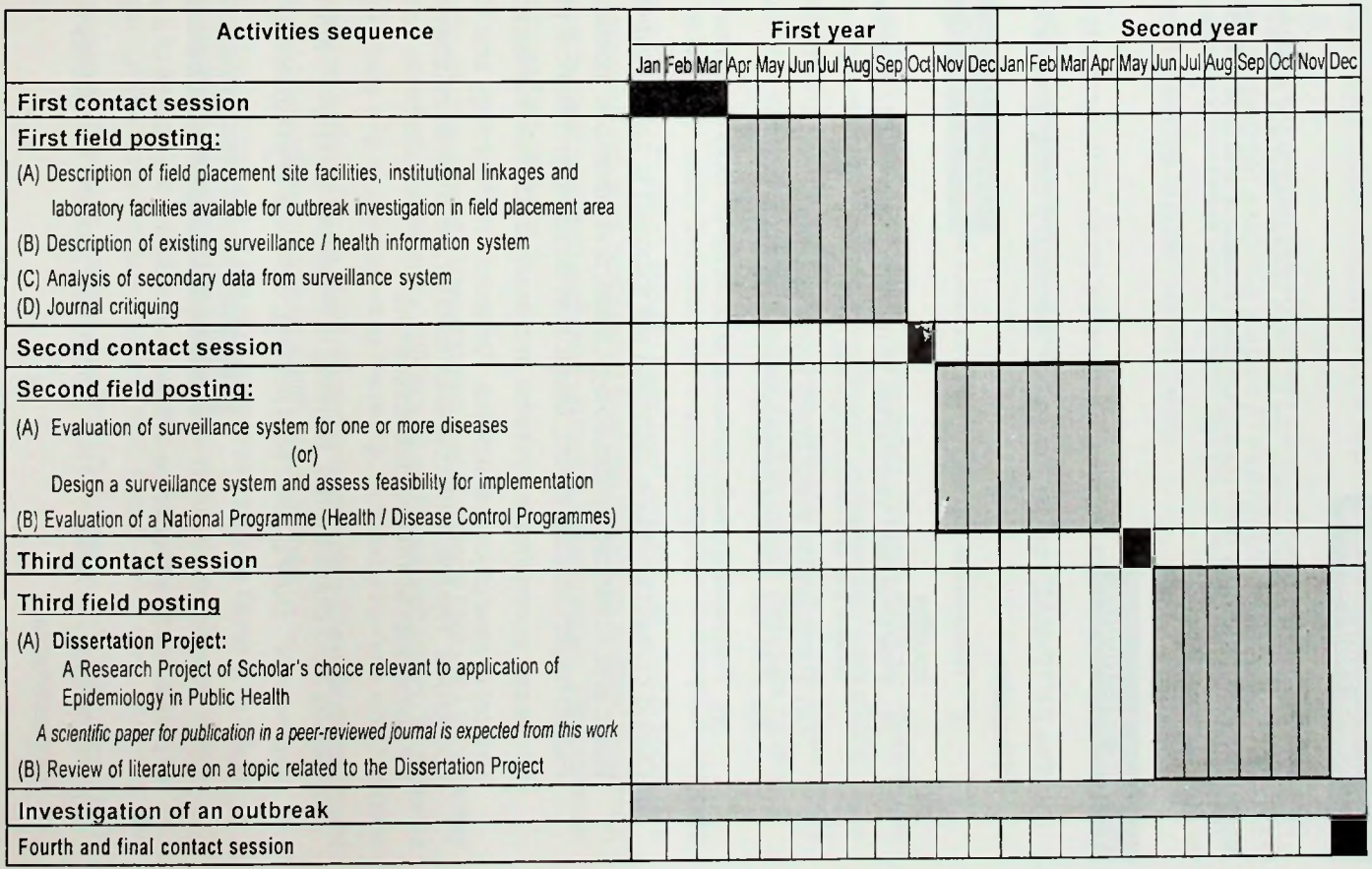
- Short-listing of applicants,
- Review of applicants by Selection Committee and
- Personal interview of applicants

Couse organization

The course, in keeping with the FETP requirements and the University's mandates, spans across 24 months. The course commences on 1st January each year. No vacation is availed by the FETP Scholars during the course. The calendar of activities of the course is shown in the next page.

Field Epidemiology Training Programme (India) - Master of Applied Epidemiology

CALENDAR OF ACTIVITIES



Attendence requirements

A minimum of 80% (relaxable up to 70% under certain conditions) attendance is mandatory both during contact sessions and field placements for course completion.

Course description

(a) The FETP-MAE course is a 2-year *"learning by doing"* programme. It includes:

- (i) Theoretical inputs through contact sessions at NIE for upto 6 months
- (ii) Practical field training for 18 months in the State / agency from where the Scholars originate
- (iii) Participation in out break investigations
- (iv) Attendance and participation at conferences
- (v) Preparation, submission and defense of "Bound volume (BV)"

(b) During contact sessions, Scholars are exposed to salient aspects of Basic and advanced epidemiology, Basic and advanced biostatistics, Public health management, Medical anthropology, Medical ethics, Diseases surveillance systems and acute outbreak management, Critical review of journal articles, Research methodology and Health economics. The first contact session lasts for 3 months and subsequently for one month at three different sessions.

(c) During field placements, training is imparted through *"hands-on-experience"*. During each field posting, Scholars are required to carry out 2 or 3 small projects assigned to them and submit reports for the same. In addition, Scholars are required to engage in one major project of public health importance of their choice during the course of 2 years.

(d) An anthology of reports of the various field projects constitutes the BV or dissertation.

(e) Major dissertation project will be a separate volume.

(b) To assure development of effective communication skills, Scholars will be guided for making paper presentations, preparing and submitting out break and research reports as well as critically reviewing journal articles of public health interest.

(c) Scholars will be assisted and encouraged to publish their project findings in peer-reviewed journals.

Training methodology

During contact sessions, training is imparted through didactic class room lectures, field visits, attendance at seminars / conferences / workshops, class and home assignments, class room discussions, practical and case study exercises and critical review of medical / public health literature / journals.

During field placements, Scholars are expected to plan and implement field projects assigned to them. Project execution will include preparation of a project proposal (including costing and financial resources support required), plan of action, data collection and analysis tools and techniques, interpretation of findings and report writing.

An important component of the training methodology includes facilitating interaction of Scholars with peers, NIE faculty and local preceptors. To achieve this, Scholars are encouraged to develop, critically review and resolve problems encountered during field placements and also share lessons learnt from the field through such exercises with all concerned.

Supervision / guidance of Scholars

Throughout the training programme NIE faculty mentors, monitor the performance and progress of individual FETP Scholars. NIE Faculty – FETP

Scholars ratio is 1:2. Special needs of FETP Scholars are also addressed by the NIE faculty so as to render the training programme a pleasant and enriching experience.

During field placements, in addition to supervision by NIE faculty, FETP Scholars are offered immediate guidance at local level by experienced local preceptors identified by NIE.

NIE faculty maintain close links with sponsoring organizations and local preceptors and thus jointly coordinate and facilitate the training programme of FETP Scholars during contact sessions as well as field postings.

Faculty

The FETP-MAE is both multi and inter-disciplinary. Hence, it draws its faculty from different disciplines, sectors and organizations. The teaching faculty consists of qualified and experienced officers from NIE and other ICMR institutions as well as visiting / guest faculty from State governments, private organizations, academic institutions and expert consultants in FETP from CDC, Atlanta, WHO, ANU, Australia. List of faculty participating in the FETP-MAE programme include:

National Institute of Epidemiology

Core Faculty

- Prof. M.D. Gupte, M.D., D.P.H., Director, NIE
  & Course Director – FETP-India
- Dr. Vidya Ramachandran, MSc (UK), MPH (USA), Ph.D.,
  Assistant Director & Course Coordinator – FETP-India
- Dr.R.Ramakrishnan, M.Sc., Ph.D., Assistant Director
- Mr. B. Kishore Kumar, M.Sc., Research Officer
- Dr. P. Manickam, B.S.M & S., M.Sc (Epid)., Research Officer

Epidemiologists from ICMR affiliated institutions are also inducted as faculty members for the programme.

Consultant / Advisers

- Prof. K. Ramachandran (Retd. Professor of Biostatistics, All India Institute of Medical Sciences, New Delhi), Adviser to Director - General, ICMR on FETP
- Prof. V.I. Mathan (Retd. Professor of Gastroenterology & formerly Director, Christian Medical College, Vellore), Adviser to Director - General, ICMR

Associate Faculty

- Dr. B. Nagaraju, M.B.B.S., D.P.H., Deputy. Director
- Mr. P. Jayabal, M.Sc., Deputy Director
- Dr. B. Narasimha Murthy, M.Sc., Ph.D. Deputy Director
- Dr. T. Venkatarao, M.B.B.S., M.Sc., Assistant Director
- Mr. A. Elangovan, M.Sc., Senior Research Officer

ICMR Epidemiologists

- Dr. M.S. Jawahar, Deputy Director (SG), Tuberculosis Research Centre (TRC), Chennai
- Dr. R. Ravi, Deputy Director (SG), Vector Control Research Centre (VCRC), Pondicherry
- Dr. S.P. Pani, Deputy Director (SG), VCRC, Pondicherry
- Dr. S. M. Mehendale, Deputy Director (SG), National AIDS Research Institute, Pune
- Dr. S.K. Kar, Director, Regional Medical Research Centre, Bhubaneshwar

External Faculty

CDC / WHO

- Dr. Douglas Hamilton, Director, EIS, CDC, USA
- Dr. Elliot Churchill, CDC, USA
- Dr. George Conway, CDC, USA
- Dr. Jason Weisfeld, CDC Consultant for FETP
- Dr. William Keen, CDC, USA
- Dr. Mahomed Said Patel, ANU, Australia
- Dr. M.V.H. Gunaratne, WHO-SEARO, New Delhi
- Dr. N. Devadasan, WR Office, New Delhi

Academic / Research Institutions

- Prof. R.K. Mutatkar, Hon. Professor, School of Health Sciences, Pune
- Prof. K. Srinath Reddy, Addl. Professor, Dept. of Cardiology, AIIMS, New Delhi
- Dr. Gajalakshmi Vendhan, formerly Head, Epidemiologist and Cancer Registry, Cancer Institute (WIA), Chennai
- Dr. V. Kumaraswamy, Deputy Director, (SG) TRC, Chennai
- Dr. D. Varatharajan, Associate Professor (Health economics & Policy), AMCHSS, SCTIMST, Thiruvananthapuram
- Dr. P. Krishnamurthy, Director, Damien Foundation, Chennai
- Dr.M.Suresh Kumar, (formerly with Institute of Mental Health), Chennai.

Assessment procedures

Rationale

The FETP – MAE is a competency based training programme. The curriculum is designed around specific sets of competencies that Scholars acquire during contact training sessions and apply practically during fieldwork.

Competency based curricula are performance oriented. Through such curricula, Scholars not only gain the knowledge related to a skill but also acquire the basic understanding of when, where, why and how to perform that skill. The FETP-MAE course seeks to establish the core competencies needed to strengthen effective Public Health Practice.

Course Credits

The FETP – MAE curriculum combines in-class training through contact sessions at NIE and practical – hands – on - experience through fieldwork. About 25% of the time is allotted for contact sessions. The balance 75% is devoted for fieldwork. The fieldwork provides practical learning opportunities for Scholars to implement concepts learnt during the contact sessions and acquire the competencies expected of them.

The FETP-MAE course carries a total of 80 credits distributed in three categories as follows:

Category	Credits
I Contact sessions	20
II Practical assignments	8
III Field work	52
Total	80

Details of credit allotment for each category are described below

Category I

The Scholars are provided inputs in various disciplines through structured modules during contact sessions. Each module is assigned credits as detailed below:

Modules	Credits
1. Principles & Methods of Epidemiology	5
2. Infectious Diseases Epidemiology	3
3. Chronic Diseases Epidemiology	2
4. Biostatistics I	3
5. Biostatistics II	2
6.Organization & Management in Public Health & Epidemiology in Health Policy	2
7. Health Economics	1
8. Anthropology in Health	1
9. Ethics in Epidemiology	1
Total	20

Category II

Credits in this category are assigned for participation of Scholars in various training and project related activities such as:

Activity	Credits
Seminars	2
Practical assignments	4
Discussions and Presentations	2
Total	8

Category III

During field postings, Scholars are assigned several projects, which involve the use of descriptive, analytic and evaluative skills and competencies and submission of technical reports for the same.

The projects assigned during each field posting and the credits for the same are as under:

Field Projects	Credits
First field posting	
(A) Description of field placement site facilities, institutional linkages and laboratory facilities available for outbreak investigation in field placement area	2
(B) Description of existing surveillance / Health information system	3
(C) Analysis of secondary data from surveillance system	3
(D) Journal Critiquing	1
Second field posting	
(A) Evaluation of surveillance system for one or more diseases	
(or)	8
Design a surveillance system & assess feasibility for implementation	
(B) Evaluation of a National Programme (Health / Disease Control Programmes)	6
Third field posting	
(A) **Dissertation Project** A Research Project of Scholar's choice relevant to application of Epidemiology in Public Health	15
A scientific paper for publication in a peer-reviewed journal is expected from this work	
(B) Review of literature on a topic related to the Dissertation Project	2
Investigation of an outbreak	
(as and when it occurs, any time during the 2 year period)	12
Total	52

Grading System

Scholars are assessed separately during contact sessions as well as during fieldwork.

For Categories I and II

Assessment of Scholars is continuous. For each module, Scholars are assessed through a variety of methods e.g. practical assignments, participation in discussions, seminar presentations, report writing and term examinations.

A five letter grading system described below is used to assess Scholar's performance:

Grade	Points
A	5
B	4
C	3
D	2
E	0

For Category III

During field postings, the Scholars are assessed on their execution of the field projects assigned to them and the reports submitted for the same. Each project will be assessed using the same five letter grading system. A review panel (NIE faculty and local preceptors) will periodically monitor the Scholar's progress and performance during field postings.

The defense of Bound Volume (BV) and Dissertation

Bound Volume

Scholars have to submit a BV, which includes (1) all the field projects completed during first two field postings (2) abstracts / papers presented at conferences and (3) articles accepted for publication in scientific journals.

Dissertation Project:

The Scholar will submit the Dissertation Project completed during the third field posting.

NIE faculty will critically review the BV and Dissertation Project and recommend the same to the panel of examiners for review.

***Viva voce* examination**

A panel of examiners (internal and external) duly appointed by NIE and SCTIMST will conduct an oral examination. The *viva voce* examination will be focused on the work contained in the Scholar's BV and Dissertation Project. The aim of the *viva voce* examination is to clarify issues related to the projects in the BV and Dissertation Project. The decision of the panel of examiners will be final.

Criteria for award of MAE Degree

To qualify for award of the FETP-MAE degree, the Scholar must :

(i) Obtain a pass in **all** individual course modules and assigned field projects with a minimum grade of **'D'**

(ii) Secure an overall average minimum grade of **'C'**

(iii) A pass in the *viva voce* examination

(iv) Participate in at least **one ongoing** outbreak investigation

(v) Participate / Present a paper or poster in a National / International Conference

Continuation in the Programme

(a) If a candidate fails (Grade 'E') in one or more of the requirements listed under categories I, II and III at the first attempt, **ONE** additional opportunity will be provided to pass the same within a period of 6 months.

(b) If a candidate does not obtain a pass in the *viva voce* examination, an additional opportunity will be given to reappear for the same within a period as recommended by the panel of examiners.

Outline of modules for FETP-MAE programme

1. PRINCIPLES & METHODS IN EPIDEMIOLOGY

Definition, Historical background, Aims & uses of epidemiology; Concepts of cause, Causal association and web of causation; Grouping of ill persons & Classification of all diseases; describing disease distribution in epidemiological terms e.g. Time, Place and Person characteristics.

Measurements in epidemiology; Cross-sectional surveys, Cohort studies, Case-control studies, Retrospective cohort studies, Nested case-control Studies and Case-cohort studies, Randomized controlled trials, Screening for disease.

2. INFECTIOUS DISEASE EPIDEMIOLOGY

(a) Concepts of infection & disease; Epidemiological triad; Natural history of disease; Immunity to infectious diseases; Herd immunity; Determinants of health & disease, Epidemiology of selected common infectious diseases of public health importance – e.g. vaccine preventable diseases, Plague, STDs, HIV/AIDS, Diarrhoeal diseases including Cholera, Acute respiratory infections, Emerging & re-emerging diseases, Antibiotic resistant infections, National disease control programmes.

(b) Disease surveillance, Epidemic preparedness & response, Principles & management of outbreaks in a community, Principles of disease surveillance, Design and evaluation of a surveillance system, National programme for surveillance of communicable diseases.

3. CHRONIC DISEASE EPIDEMIOLOGY

Concepts of epidemiologic transition and the emergence of chronic disease burden – particularly non-Infectious diseases e.g. CVD, Hypertension, Diabetes Mellitus, Respiratory Diseases – Allergic conditions, Bronchial asthma, Cancer and reemerging / new infectious diseases e.g. Tuberculosis, Filariasis, issues

in study designs of chronic diseases and development of a surveillance system for chronic diseases, Molecular and laboratory techniques in diagnosis of infectious diseases and outbreak management.

4. BIOSTATISTICS - I

Basic concepts in biostatistics, Nature of statistical data, Tabular and diagramatic presentation of data, Measures of central tendency and Measures of dispersion; Introduction to probability and probability distributions, Sampling distribution and concept of Confidence Intervals and Testing of Hypothesis, Sources of Indian data, Population census, SRS and causes of death statistics.

5. BIOSTATISTICS - II

Testing of hypothesis for single mean & single proportion, Two means and two proportions, Chi-square test for several proportions, Introduction to ANOVA, Introduction to non-parametric tests, Correlation and regression including introduction to multiple linear regression, Introduction to survival analysis and life tables; Direct and indirect standardization, Use of computers in analysis of epidemiological data.

6. ORGANISATION AND MANAGEMENT IN PUBLIC HEALTH

Evolution of health care System in India, Health programme development, Role of epidemiology in programme development, Management in public health : Organization & organizational behaviour, MIS/HIS/IEC and Monitoring and evaluation

7. EPIDEMIOLOGY IN HEALTH POLICY

Health policy formulation in India, Definition of public policy and health policy, Influence of science, economics, sociology and politics on health policy including advocacy, Gender issues in public health and health policy

8. HEALTH ECONOMICS

Introduction, Techniques of economic evaluation, Cost concepts, Measures of effectiveness and decision Rule

9. ANTHROPOLOGY IN HEALTH

- Underlying principles of Anthropology and their application to public health and overview of anthropological methods
- Case studies to demonstrate application of Anthropology to Public Health
    - Infectious diseases and Non-infectious diseases
- Qualitative research methods
    - Participant observation
    - Ethnographic studies
    - In-depth interview
    - Key informant interview
    - Focus group discussions

  Case studies of any of these
- Analysis and interpretation of qualitative studies

10. ETHICS IN EPIDEMIOLOGY

Ethical issues as applicable to epidemiology, Historical foundations and Professional standards of conduct for epidemiologists, securing consent for epidemiologic research, Confidentiality and privacy protection, Ethically optimized study designs, Ethical issues in the interaction with study subjects and disclosure of results, Role of the institutional review board and ethical review committees – equity and quality assurance issues, Prevention of scientific misconduct in epidemiologic research.