

# **MALABAR CANCER CENTRE**

**DIVISION OF ONCOPATHOLOGY**

**DEPARTMENT OF CLINICAL LABORATORY SERVICES & TRANSLATIONAL  
RESEARCH**



**ONE YEAR CERTIFICATE COURSE IN CYTOTECHNOLOGY WITH ONE YEAR STIPENDARY  
INTERNSHIP**

**PROSPECTUS**

**2018-20**

## INTRODUCTION

Malabar Cancer Centre, Thalassery (MCC) is an autonomous institution under Health and Family Welfare Department, Government of Kerala, started with an aim to establish a comprehensive cancer centre, providing the much-required oncology care to the population of Northern region of Kerala and vicinity parts of Karnataka and Tamil Nadu. MCC is providing a full spectrum of Oncological Care as an autonomous not-for-profit institution funded by the State Government and other sources.

Malabar Cancer Centre now has full-fledged laboratory divisions of Oncopathology which includes Histopathology & Cytopathology which has state of the art and automated equipments being used for cancer diagnosis. Today we are in a position to offer training and impart knowledge to student technician community who can be employed country wide. They can be absorbed into the ambitious cervical cancer eradication programme which is being envisaged by the Government of Kerala. This will also be in keeping with our social responsibilities. An added advantage would be that it will also provide the hospital industry with the much needed hands to cope with the increasing patient work load.

## ABOUT THE COURSE

Cytopathology is the branch of Pathology that studies and diagnoses disease on a cellular level. Cytopathology is commonly used to investigate diseases involving a wide range of body sites, **not** only to aid in diagnosis of cancer, but also to detect inflammatory and infective conditions. It is often a first line investigation in the approach to disease diagnosis. The course aims at creating trained technical manpower to prepare cytology smears and learn to screen the smears for atypical morphologic changes. The skill to triage the abnormal and refer it for higher opinion is taught.

## FOR WHOM

### Age:

The applicants will not be above the age of 35 years as on 01-01-2018. The upper age limit is relaxed by six years for SC/ST candidates and 2 years in the case of OBC candidates.

### Basic Qualification and Experience

M.Sc. Medical Lab. Technology with Cytology as special subject.

OR

B.Sc. Medical Lab. Technology with experience in Cytology for two years

OR

5 yrs. experience in cytology as Lab. Technician following DM.L.T with B.Sc (Life sciences).

OR

5 yrs. experience in cytology as Lab. Technician following passing the cytotechnician's examination conducted by IAC.

The candidates will have to appear for a written examination (Multiple choice question paper) followed by interview.

### **KEY FEATURES**

- Hands on practical experience in the field of cytology
- Handling & processing cytology smears and effusion fluid & FNA samples
- Staining techniques with Papanicolau & Giemsa techniques
- Cell block preparation and processing
- Cytocentrifuge technique for CSF cytology
- Liquid based cytology for Gynaec cytology
- Screening of Pap smears for abnormalities
- Reporting of Pap smears and cytology smears

### **KEY DATES**

Last date of application: 15/02/2018

Date of written exam & interview: 10/03/2018

Date of course commencement: April 2018

### **SELECTION**

The candidates will have to appear for a written examination of duration 45 minutes on the subject, which consists of 50/ 100 multiple choice questions.

The selection of candidates will be based on the grade /mark obtained in the written examination. In the case of a tie in the mark/grade, the marks of the final MSC/BSc/Pre-Degree examination will be considered.

If the candidates has published papers/thesis/research work on the subject, may produced before the Interview Board for perusal if so desired by the Interview Board

### **DURATION AND COURSE OF TRAINING**

The duration of the course will be one year. The course of training will be conducted in the Oncopathology Division of MCC, Thalassery as per the syllabus prescribed. After completion of one year, the candidate has to undergo one year stipendiary internship for successful completion

### **CENTRE**

Malabar Cancer Centre, Division of Oncopathology, Thalassery, Kannur, Kerala

### **NUMBER OF SEATS: 2**

### **PROMOTION**

An examination will be conducted at the end of the course with written, oral and practical test. A minimum of 50% of the marks in each subject is eligible for a pass. Minimum requirement for successful completion- attendance, number of smears taken, colposcopy attended, camps attended. A log book should be maintained during course

and stipendiary internship. During internship, candidate may be posted in peripheral centres

A certificate will be given to the successful candidate. Candidates failing in any subject have to undergo additional course or extension of training period as decided by the authorities

### **COURSE FEE**

Course fee Rs 25,000/-. At the time of admission- Rs 10000/-. Balance amount- Rs 15000/-(in two instalments)

**APPLICATION FEE: Rs 500/-**

### **COURSE COVERAGE**

<b>MODULES</b>	<b>TOPICS</b>
<b>Introduction</b>	<ul style="list-style-type: none"> <li>▪ Epidemiology of Natural History of Cancer</li> <li>▪ National importance, Current scenario,</li> <li>▪ Prevention, awareness,</li> <li>▪ Risk factors of cancer</li> <li>▪ History, development &amp; scope of Cytology</li> <li>▪ Clinical applications of Cytology, Cancers in general, laboratory ethics etc.</li> </ul>
<b>Cytopreparatory-techniques</b>	<ul style="list-style-type: none"> <li>▪ Principles of fixation</li> <li>▪ Various fixatives, pre-fixation</li> <li>▪ Coating and spray fixation</li> <li>▪ Mailing of unstained smears</li> <li>▪ Preservation of fluid specimens</li> </ul>
<b>General principles of staining</b>	<ul style="list-style-type: none"> <li>▪ Nuclear and cytoplasmic staining</li> <li>▪ Routine stains in cytology with advantages and disadvantages</li> <li>▪ Papanicolaou, Shorr ,H &amp; E, Vital stains</li> <li>▪ Romanowsky's stains</li> <li>▪ Diff-Quick etc.</li> </ul>
<b>Clearing and mounting</b>	<ul style="list-style-type: none"> <li>▪ Different clearing and mounting agents</li> <li>▪ Manual and automation</li> </ul>

<b>Quality control measures in staining techniques</b>	<ul style="list-style-type: none"> <li>▪ Internal and external quality control measures</li> </ul>
<b>Microscopy</b>	<ul style="list-style-type: none"> <li>▪ Basic concepts and use of microscopes</li> <li>▪ Principles of light microscopy</li> <li>▪ Types of microscope-Light microscope, Electron Microscope, Phase contrast microscope &amp; Fluorescent microscope.</li> </ul>
<b>Demonstration</b>	<ul style="list-style-type: none"> <li>▪ Staining techniques</li> <li>▪ Preparation of various stains</li> <li>▪ Microscopy</li> </ul>
<b>Normal histology and cytology of epithelial and connective tissues</b>	<ul style="list-style-type: none"> <li>▪ Cell structure, functions with recent concepts.</li> <li>▪ Demonstration of normal cells and tissue</li> </ul>

<b>Gynaecological Cytology</b>	<ul style="list-style-type: none"> <li>▪ Anatomy, structure and physiology of female genital tract (FGT)</li> <li>▪ Correlation of structure of FGT and ovarian hormones</li> </ul>
<b>Various cytological indices.</b>	<ul style="list-style-type: none"> <li>▪ Cytology from birth to menarche</li> <li>▪ Cytology of menopause</li> <li>▪ Cytology of anovulatory cycle</li> <li>▪ Cytology of normal and abnormal pregnancy</li> <li>▪ Hormonal cytology of menstrual cycle (ovulatory &amp; anovulatory)</li> </ul>

<b>Hormonal cytology techniques</b>	<ul style="list-style-type: none"> <li>▪ Collection of smears for hormonal assessment</li> <li>▪ Various types of cells in vaginal smear</li> <li>▪ Changes according to different phases of menstrual cycle.</li> </ul>
<b>Collection of gynaecological materials</b>	<ul style="list-style-type: none"> <li>▪ Vaginal smear</li> <li>▪ Cervical smear</li> <li>▪ Pool smear</li> <li>▪ VCE method</li> <li>▪ Endocervical and endometrial smears</li> <li>▪ Collection devices</li> <li>▪ Colposcopy and biopsy etc</li> <li>▪ Demonstration</li> </ul>
<b>Cervical cytology</b>	<ul style="list-style-type: none"> <li>▪ Normal cells in cervical smears</li> <li>▪ Metaplastic cells</li> <li>▪ Reserve cells</li> <li>▪ Inflammatory cells,</li> <li>▪ Regenerating endocervical cells etc.</li> <li>▪ Demonstration of above cells.</li> </ul>
<b>Inflammatory lesions of the Female Genital tract</b>	<ul style="list-style-type: none"> <li>▪ Specific and non-specific inflammation</li> <li>▪ Various infections</li> <li>▪ Demonstration of the above</li> </ul>
<b>Human Papilloma Virus (HPV):</b>	<ul style="list-style-type: none"> <li>▪ Molecular basis of HPV infections and association with cervical lesions</li> </ul>
<b>Cervical Carcinogenesis</b>	<ul style="list-style-type: none"> <li>▪ Etiological factors of carcinoma</li> <li>▪ Concept of development of carcinoma cervix</li> <li>▪ Pre-cancerous lesions</li> </ul>
<b>Pre-cancerous Lesions</b>	<ul style="list-style-type: none"> <li>▪ Histology and Cytology</li> <li>▪ Classification of Dysplasia, CIN, SIL</li> <li>▪ Demonstration of pre-cancerous lesions</li> </ul>

<b>Reporting format</b>	<ul style="list-style-type: none"> <li>▪ Bethesda system of reporting of cervical pre-cancerous &amp; cancerous lesions with training in microscopic screening for abnormalities</li> </ul>
<b>Light microscopic features of malignant cells</b>	<ul style="list-style-type: none"> <li>▪ Nuclear and cytoplasmic abnormalities</li> <li>▪ Morphologic characteristics of cancer cells</li> </ul>
<b>Carcinoma Insitu &amp; Microinvasive carcinoma</b>	<ul style="list-style-type: none"> <li>▪ Definition &amp; cytology with basic histopathology</li> </ul>
<b>Invasive carcinoma of uterine cervix</b>	<ul style="list-style-type: none"> <li>▪ Different types of carcinoma of cervix.</li> <li>▪ Cytology of Squamous cell carcinoma.</li> <li>▪ Cytology of Adenocarcinoma</li> <li>▪ Demonstration of different malignancies</li> </ul>
<b>Atrophic smear</b>	<ul style="list-style-type: none"> <li>▪ Autolytic atrophy and its problem in differentiating from malignancy including demonstration.</li> </ul>
<b>Endometrial &amp; ovarian cytology</b>	<ul style="list-style-type: none"> <li>▪ Collection of material</li> <li>▪ Cytology of normal endometrium, hyperplasia and carcinoma</li> <li>▪ Value of cytology in ovarian carcinomas</li> <li>▪ Pouch of Douglas aspiration &amp; Needle aspiration-ovarian masses &amp; miscellaneous</li> <li>▪ Demonstration of the above slides</li> </ul>

<b>Radiation Changes</b>	<ul style="list-style-type: none"> <li>▪ Normal and malignant cells</li> <li>▪ Demonstration of the above</li> </ul>
<b>Non Gynaecological Cytology</b>	<ul style="list-style-type: none"> <li>▪ Collection, preparation &amp; fixation of non-gynaecological materials.</li> <li>▪ Sputum, bodyfluids (peritoneal, pericardial, pleural), imprint cytology</li> <li>▪ CSF, urine etc.</li> </ul>
<b>Concentration techniques in cytology</b>	<ul style="list-style-type: none"> <li>▪ Centrifugation,</li> <li>▪ Cyto-centrifugation</li> <li>▪ Membrane filters</li> <li>▪ Monolayer cell block techniques</li> <li>▪ Imprint cytology</li> <li>▪ Immunocytochemistry on cell block.</li> </ul>
<b>Respiratory tract</b>	<ul style="list-style-type: none"> <li>▪ Anatomy, physiology and cytology of Respiratory tract.</li> <li>▪ Collection of materials, including trans-thoracic FNAC and guided FNAC</li> <li>▪ Details of processing of sputum, bronchial brushings, bronchial washings, and lavages</li> <li>▪ Cytology of the respiratory tract</li> <li>▪ Benign disorders &amp; malignancies</li> <li>▪ Classification</li> <li>▪ Demonstration of the above</li> </ul>
<b>Gastro intestinal tract &amp; Urinary tract</b>	<ul style="list-style-type: none"> <li>▪ Anatomy and Physiology</li> <li>▪ Cytopathology</li> </ul>
<b>Serous Effusions</b>	<ul style="list-style-type: none"> <li>▪ Cytology of reactive mesothelial cells vs adenocarcinoma</li> <li>▪ Adenocarcinoma vs malignant mesothelioma</li> <li>▪ Demonstration of the above</li> </ul>
<b>Oral cavity</b>	<ul style="list-style-type: none"> <li>▪ Anatomy and Etiology of Oral cavity</li> <li>▪ Pre-cancerous conditions</li> <li>▪ Malignancies</li> <li>▪ Early cancer detection</li> </ul>
<b>Central nervous system</b>	<ul style="list-style-type: none"> <li>▪ Cytology of CSF</li> <li>▪ Demonstration of the above</li> </ul>
<b>Fine needle aspiration cytology</b>	<ul style="list-style-type: none"> <li>▪ Scope and objectives</li> <li>▪ Common sites of FNAC like Breast, thyroid salivary gland, lymph node, liver ... etc- their anatomy &amp; cytology.</li> </ul>



	<ul style="list-style-type: none"> <li>▪ Cytology of benign and malignant lesions of above sites.</li> <li>▪ Advantages and disadvantages of FNAC.</li> </ul>
<b>Techniques of Fine Needle Aspiration and Smear preparation</b>	<ul style="list-style-type: none"> <li>▪ Rapid Onsite evaluation (ROSE) of FNAC of superficial organs /guided procedures</li> </ul>
<b>Tissue culture and cytogenetics. Molecular techniques</b>	<ul style="list-style-type: none"> <li>▪ Karyotyping of chromosomes</li> <li>▪ DNA Isolation.</li> <li>▪ Polymerase chain reaction</li> <li>▪ Gel documentation</li> <li>▪ RT- PCR</li> </ul>
<b>Advances in cytology techniques</b>	<ul style="list-style-type: none"> <li>▪ Immunocytochemistry</li> <li>▪ Flow cytometry</li> <li>▪ FISH</li> <li>▪ Digital morphometry</li> <li>▪ Demonstration of immunocytochemistry.</li> </ul>
<b>Liquid Based Cytology</b>	<ul style="list-style-type: none"> <li>▪ Monolayer slide preparation technique - gynaecological and non gynaecological samples.</li> <li>▪ Principle and Basic concepts.</li> <li>▪ Different types– SurePath, ThinPrep, MonoPrep ..etc</li> <li>▪ Advantages and disadvantages</li> </ul>
<b>Cancer Control Programmes</b>	<ul style="list-style-type: none"> <li>▪ Early Cancer Detection Campaigns</li> <li>▪ Volunteer training programmes</li> <li>▪ Awareness classes , Exhibitions etc</li> </ul>
<b>Organization of Cytology Laboratory</b>	<ul style="list-style-type: none"> <li>▪ Specimen acceptance and adequacy</li> <li>▪ Specimen preparation and staining – quality control</li> <li>▪ Screening and Reporting</li> </ul>
<b>Laboratory safety measures</b>	<ul style="list-style-type: none"> <li>▪ Guidelines of storing and handling chemicals &amp; equipments</li> <li>▪ Infectious hazards</li> </ul>

## **TRAINING METHODOLOGY**

# **Theory:** Lectures, seminars, group discussions

#**Practical:** demonstration of laboratory techniques and slides.

## **LOG BOOK**

To be maintained on a daily basis recording number of smears processed, academic sessions attended and presented.

## **CAPABILITY TO BE DEVELOPED AT END OF COURSE**

# Hands on experience in handling & processing cytology smears and effusion fluids & FNA samples

# Staining techniques with Papanicolaou & Giemsa techniques.

# Cell block preparation and processing

# Cytocentrifuge technique for CSF cytology

# Liquid based cytology for Gynaec & Non-gynaec cytology

# Screening of all cytology smears for abnormality

# Reporting of normal Pap smears.



Experience

From Date	To Date	Duration (mo)	Institute	Designation	Job Profile

Present Job/ Position:

Any Other Achievements:

Details of payment of application fee:

- a) RTGS/NEFT Reference No:
- b) Date of Remittance:
- c) Name of Bank:
- d) Branch Name:
- e) Amount:
- f) Remarks if any:

Declaration

I.....do hereby declare that the information furnished above is true to the best of my knowledge and belief.

Place:

Date:

Signature

.....

For Office Use Only

Reg.No