ANNEX 1
OBJECTIVES

At the completion of the training period, the fellow should be able to:

1. **Breast Surgery**
   - Evaluate and manage common benign and malignant breast conditions.
   - Assess the indications and contraindications for, and demonstrate experience in the performance and interpretation of the results of common procedures, including but not limited to cyst aspiration, fine needle aspiration, percutaneous core biopsy with and without image guidance, punch biopsy of skin.
   - Assess the indications for techniques to optimize cosmetic outcome, minimize surgical trauma, and achieve best oncologic outcome for cancer operations for all major breast procedures, including but not limited to:
     
     a) **Breast conservation- indications and contraindications**
        - The predicted aesthetic outcome after breast conservation
        - The role of neoadjuvant systemic treatment in facilitating breast conservation, including indications and contraindications as well as evaluating the response
        - Assessing margin width and ways to improve negative margins
        - Impact of margins on local recurrence and survival
        - Methods to correct poor aesthetic outcome after breast conservation

     *Techniques*
     - Advantages and disadvantages of various localization methods
     - Wide local excision, lumpectomy, guided wire localization
     - IOUS (intraoperative ultrasound guided surgery)
     - ROLL (radioguided occult lesion localization)
     - RSL (radioguided seed localization)
Breast Conservative Oncoplastic techniques

b) Mastectomy and Reconstruction.

Indications and techniques (Simple, skin sparing, nipple sparing)
Types of reconstruction- implant and autologous
Factors influencing aesthetic outcome after breast reconstruction
- Oncological safety of immediate and delayed reconstruction
- Influence of reconstruction on the patient’s quality of life

c) Sentinel node biopsy (SNB)

The sentinel node concept (Injection techniques and type of isotopes)
The indications and contraindications of SNB

d) Axillary lymph node dissection (ALND)

- Anatomy of the axilla
- The indications and contraindications of ALND
- Arm Reverse Mapping

- Demonstrate proficiency in interdisciplinary evaluation and pre-surgical treatment planning with multiple disciplines, including but not limited to radiology, plastic and reconstructive surgery, medical oncology, radiation oncology, medical oncology and pathology
- Identify the indications for and techniques of palliative surgical procedures for locoregional relapse as well as surgical management of primary breast tumor in Stage IV breast cancer.
- Evaluate and manage arm lymphedema as a side effect of breast cancer treatment.

Each breast fellow must participate in a minimum of 50 operative procedures (as surgeon or first assistant). The experience should include diagnostic biopsies, partial mastectomies, mastectomies, axillary node dissections, sentinel node biopsies, and reconstructive procedures.

In addition to open breast procedures, experience with stereotactic and ultrasound guided breast biopsy is desirable.
2. **Breast Imaging**
   - Understand the techniques of diagnostic mammography, including the BI-RADS nomenclature, recommendations for additional views, and identify mammographic characteristics of benign and malignant disease.
   - Understand the basics of breast ultrasound, and distinguish normal breast sonographic anatomy, sonographic characteristics of simple cysts, complex cysts, well-circumscribed probably benign mass, and solid mass of suspicious nature.
   - Demonstrate training in performance of image-guided biopsy techniques.
   - Demonstrate experience in selecting image-guided breast intervention procedures, including but not limited to, ductograms, image-guided (i.e., ultrasound, stereotactic, MRI and others) fine needle aspiration, and core biopsies.
   - Discuss the evolving breast imaging technologies.
   - Evaluate the present indications for and possible future applications of MRI in the management of malignant and benign breast disease.
   - Explain evolving surgical technologies such as percutaneous ablation, core vacuum resection.
   - Discuss the complexities, advantages and disadvantages of breast screening in women at different age groups.

3. **Genetics**
   - Identify patients at high risk for developing breast cancer, including risk factors such as pathologic, familial, genetic, and previous cancer inducing therapies (i.e., childhood radiation).
   - Discuss the epidemiological evidence of the effect of environmental factors (broadly defined as nutrition, lifestyle, pollutants, chemicals, social economic status, etc.) on high-risk patients.
   - Advise patients regarding estimations of risk by contemporary models and risk reduction by screening, medication, and surgery.
   - Review the available clinical trials for breast cancer risk reduction and facilitate the option of participation in such trials.
   - Advise patients regarding indications, usefulness, costs, complications and privacy issues of genetic testing.
• Interpret the various pathology findings as they influence risk. Describe and evaluate surgical options in patients suspected of an inherited susceptibility.
• Identify resources available for genetic testing and counseling.

4. **Medical Oncology**
• Assess the indications and contraindications for adjuvant systemic chemotherapy and hormonal therapies.
• Describe the mechanism of action; risks, benefits and indications of existing and developing targeted therapies.
• Describe the prominent molecular pathways in the development and progression of breast cancer.
• Describe the most commonly prescribed chemotherapy and hormonal agents and their associated acute and chronic toxicities.
• Identify toxicities of prescribed agents.
• Identify indications, techniques and interdisciplinary coordination required for neoadjuvant treatments.
• Demonstrate experience in the interdisciplinary management of recurrent and metastatic disease including palliative care

5. **Pathology**
• Explain the benign and malignant pathological aspects of breast disease.
• Understand optimal techniques for orienting, processing and assessing the pathology specimen.
• Explain and evaluate immunohistochemical stains, cytology, and tumor markers and other indicators of prognosis that are relevant to treatment.
• Discuss evolving pathology technology (molecular techniques, etc) and intraoperative indications.
• Knowledge of the different genomic platforms (Mammaprint, Oncotype, PAM 50…) and indications for its use.
• Stage breast cancer clinically and pathologically.
6. **Plastic and Reconstructive Surgery**
   - Demonstrate an understanding of reconstructive and surgical procedures such as: Tissue expander, implant, and a variety of flap reconstruction techniques for immediate and delayed reconstruction in the setting of post mastectomy reconstructive surgery.
   - Understand the general breast plastic procedures such as augmentation and reduction as they relate to total management of women with benign and malignant breast disease.
   - Explain and evaluate the interrelationship of adjuvant therapies on planning and timing of plastic and reconstructive surgery.

7. **Psycho-Oncology**
   - Recognize needs for social support systems for patients and their families throughout diagnosis, treatment, and transition to surveillance, and relapse.
   - Recognize cultural diversity and the different needs of patients and their families with regard to illness and treatment.
   - Recognize patients at psychosocial high risk and identify resources for referral. Discuss complementary therapies/integrated care.

8. **Radiation Oncology**
   - Understand the process the patient experiences undergoing radiation therapy to the breast, including: simulation, treatment planning, treatment delivery, and acute and chronic effects of therapy.
   - Assess the indications and contraindications for and complications of post breast conservation radiation therapy in both ductal carcinoma in situ and invasive carcinomas, post mastectomy radiation therapy.
   - The management of chest wall recurrences.
   - Knowledge of the indications for nodal basins radiation therapy as well as side effects
   - Assess the impact of radiation therapy on various surgical options for reconstruction.
   - Discuss the evolving technologies of partial breast irradiation (intraoperative radiation therapy, Conformational 3D, brachytherapy…).
9. **Research**

- Clinical experience alone is insufficient education in the breast fellowship training. Fellows must participate in regularly scheduled programs, such as conferences, lectures, journal clubs, multidisciplinary case conferences and multidisciplinary CME meetings.
- The didactic experience should include clinical breast problems, but also translational science, clinical research, and ethical problems. The fellow should be able to participate in:
  - Clinical trials development and patient enrollment and prospective and retrospective clinical research.
  - Enrollment in patients in available national protocols.
  - The conduct and critical review of research studies.
  - The preparation of manuscripts suitable for publication.

**Additional Essential Training.** In order to accomplish with the objectives, the fellowship must provide exposure to and experience in the multidisciplinary management of breast disorders. The fellowship must provide opportunities to participate in multidisciplinary clinics, tumor boards, or conferences. Required non surgical rotations include but not limited to:

- **Radiation Oncology** - One month dedicated to learning the principles and practice of radiotherapy, as related to the multidisciplinary management of breast cancer as outlined in the educational objectives.
- **Surgical Pathology** - One-month rotation in the surgical pathology department or a documented equivalent exposure encompassing benign and malignant histology.
- **Medical Oncology** - A minimum of one month dedicated to medical oncology. Fellows should gain experience in evaluating and managing patients receiving chemotherapy, and hormonal therapy.

The rotation may be done during the whole month or distributed during the Fellowship program depending on Institutions.