Advanced Diploma in Sonography

The Advanced Diploma in Sonography was first launched by Nanyang Polytechnic in July 1996. This medical imaging course at the advanced diploma level provides opportunities for specialisation in radiation medicine. Healthcare professionals with a Diploma in Diagnostic Radiography or Radiation Therapy from the Nanyang Polytechnic or an equivalent qualification are eligible to apply for the course to acquire specialist knowledge and skills in sonography.

Course Aims

Graduates of the Advanced Diploma in Sonography will be able to:

- Educate health care Professionals to post-basic diploma level in medical ultrasound
- Provide graduates with an understanding of the use of ultrasonography in medical diagnosis
- Produce graduates capable of effective communication with their peers, patients, members of the public and related professionals
- Produce graduates who are capable of and interested in undertaking further studies and research related to Medical Ultrasound

Clinical Education

All students will be required to have regular access to an ultrasound facility to gain experience in most areas of medical ultrasound and satisfy the clinical requirements:

Course Duration

The total academic and clinical component of the course will be in 3 semesters spread over 18 months.

Classes are conducted twice a week in the evenings from 6 -10 p.m.

*Course will only be conducted based on sufficient number of applicants.

Total for 18-month Part-time Curriculum

Academic	460 hours
Clinical	600 hours
TOTAL	1060 hours

Entry Requirements

To be eligible for entry into the course, applicants must:

- have a Diploma in Diagnostic Radiography or Radiation Therapy from Nanyang Polytechnic or a qualification deemed to be equivalent;
- have a minimum of two years' post qualification clinical experience; and
- provide written confirmation from the Head of Department of employment (and any additional requirement that may be prescribed), that he or she possesses equivalent knowledge to radiographers graduating from Nanyang Polytechnic in radiation medicine, and has the required access to a medical ultrasound facility.

Course Structure

- **SEMESTER 1**

Module Code	Module	Hours
HS8869	Cross Sectional and Sonographic Anatomy	40
HS8870	Ultrasound Physics and Instrumentation	40
HS8871	Abdominal Ultrasound	50
HS8872	Applied Communication in Sonography	30
HS8873	Clinical Practice 1	200

- **SEMESTER 2**

Module Code	Module	Hours
HS8874	Principles of Research	30
HS8875	Principles of Sonographic Practice	40
HS8876	Obstetrics and Gynaecology	50
HS8877	Small Parts Ultrasound	40
HS8878	Clinical Practice 2	200

- **SEMESTER 3**

Module Code	Module	Hours
HS8879	Vascular Ultrasound	40
HS8880	Echocardiography	40
HS8881	Medicolegal Aspects of Sonography	30
HS8867	Image Quality and Appreciation	30
HS8882	Clinical Practice 3	200

Modules Synopses

- **SEMESTER 1**

1) Ultrasound Physics and Instrumentation

Study the physical principles underlying the nature, production, propagation and attenuation of ultrasound to enable the student to understand the application of ultrasound in medical diagnosis, to study the effects of ultrasound on biological tissues and to make an assessment of any deleterious effects of ultrasound.

The student will also be able to understand the construction, characteristics, controls and operation of ultrasound equipment so as to enable the student to consistently produce high quality ultrasound images for diagnostic purposes.

2) Abdominal Ultrasound

Study the ultrasound techniques, ultrasonic anatomy and pathology in investigations of the abdomen. Describe the anatomy, physiology and normal variations of the liver, gall bladder, pancreas, spleen, kidneys, bladder, great vessels, abdominal wall and diaphragm and identify the normal and abnormal sonographic appearances of these structures. This study will include interventional techniques and paediatric abdominal ultrasound.

3) Applied Communications In Sonography

Equip students with a practical knowledge of listening and communication skills. This module serves to equip sonographers with techniques to promote smooth interpersonal relationships, avoid misunderstandings, and increase sensitivity to others' feelings. In order to maximize his/her listening and communication skills, the student will also learn how to encourage others to listen and communicate with him/her. This module also includes effective writing of ultrasound reports.

4) Cross-Sectional Sonographic Anatomy

Equip students to be able to identify the structures normally observed in sonographic sections of the human body. The module will review the anatomy and basic embryological development of all body structures, emphasizing size, location, and relationships, with emphasis on the normal anatomical and sonographic appearances of structures in all planes. The areas covered will include the abdomen, pelvis, head, neck, breast, testes and the uterus throughout the normal stages of pregnancy.

5) Clinical Practice 1

Enable the student to perform ultrasound examinations on various regions of the body comprehensively and competently. Students are required to submit three case-studies and one viva-voice would be done as part of the assessment.

- **SEMESTER 2**

6) Principles Of Sonographic Practice

Investigate the principles underlying ultrasound visualization techniques as a basis for adequate diagnosis. Enable the students to understand the principles of operation of the image recording equipment available to them and to be able to make comparisons among them. Enable the students to understand scanning ergonomics and therefore reduce the risk of injury to the sonographer during scanning.

7) Principles Of Research

Formulate research problems into empirically testable hypotheses or aims. Describe and evaluate different data-collection methods for various types of investigations using standard terminology. Choose appropriate sampling techniques and calculate minimum sample sizes for selected confidence levels and specified reliability limits in sampling attributes. Select appropriate descriptive and inferential statistical techniques for different types of design. Perform statistical computation using SPSS. Assess the ethical and practical constraints on clinical studies. Discuss the implications of research for effective clinical practice
Learn how to critique ultrasound articles.

8) Obstetrics and Gynaecological Ultrasound

Obstetrics:

Includes ultrasonic appearances of normal pregnancy stages, normal and abnormal features of the uterus, assessment of fetal growth and maturity (different regions measured to determine gestational age), fetal abnormalities (abnormalities which can indicate chromosomal involvement), complications of pregnancy, other procedures used to determine abnormality (eg. Amniocentesis) as well as normal and abnormal fetal development and its appearances.

Gynaecology:

Anatomy & physiology of the female pelvis, pregnant and non-pregnant, the pediatric and post-menopausal pelvis, care of the patient, related extra-pelvic pathologies, infertility, doppler evaluation, screening in obstetrics/gynaecology (well woman, ovarian scanning) as well as normal and pathological conditions of the uterus and adnexae.

9) Small Parts Ultrasound

To study the ultrasound techniques used in investigation of small parts and musculoskeletal ultrasound. Student will be able to recognize normal and abnormal ultrasound findings. As for small parts, different types of benign and malignant tumours will be discussed. The appearances of each tumour will be included. Different types of tendon/ligament tears will be

discussed under musculoskeletal ultrasound followed by appearances of abnormalities on ultrasound.

10)Clinical Practice 2

Enable the student to perform ultrasound examinations on various regions of the body comprehensively and competently. Students are required to submit six case-studies and one viva-voice would be done as part of the assessment.

- **SEMESTER 3**

11)Vascular Ultrasound

Develop an understanding of Doppler physics and its application and importance in vascular scanning. Gain an understanding of the physiology of normal circulation, the process of vascular disease and its effect on the normal circulation. Understand the ultrasound techniques involved in scanning the cerebro-vascular system, upper and lower limb vessels, and abdominal vessels as well as gaining an appreciation for the less common indications for vascular ultrasound. Understand the need for allied tests for venous and arterial disease.

12)Echocardiography

Provide an understanding of the basic principles and imaging techniques used in echocardiography. Understand cardiac anatomy and physiology, common causes and pathology of certain conditions and components of a normal echocardiogram.
Indications and clinical applications of trans-oesophageal echocardiography and Stress testing – Treadmill & SDE will also be covered

13)Image Quality And Appreciation

Enable the students to examine and interpret ultrasound images critically in terms of optimising image quality, image viewing conditions, understand the concepts of computer aided diagnosis and understand how the eye functions.

14) Medico-legal aspects of Sonography

To introduce students to those aspects of laws and ethics which are relevant to the practice of sonography including the Singapore legal system, and to identify strategies that may be used to resolve legal or ethical dilemmas in this specialized area of medicine.

15) Clinical Practice 3

Enable the student to perform ultrasound examinations on various regions of the body comprehensively and competently. Students are required to submit six case-studies and one viva-voice would be done as part of the assessment.

Fee Payable (inclusive of GST) after MOE subsidy:

For Singapore Citizens: $900 per participant
For Singapore PR: $1200 per participant
For foreigners: $9040

Training Schedule (Next Intake)

Course Schedule: 18 October 2010 to 13 April 2012
Application Exercise: To be announced soon

Application

Applicants are to submit their application online at www.nyp.edu.sg/pdc. After submission, please submit your supporting documents (photocopy of NRIC, educational transcripts, diploma, etc.) to the following address **by the closing date**:

Student Recruitment & Admissions Office,
Nanyang Polytechnic,
Campus Centre (Blk A), Level 2,
180 Ang Mo Kio Avenue 8,
Singapore 569830

Organisations sponsoring their staff for the programme are required to submit the Company-Sponsorship Form to the above address by the closing date. This can be obtained from the Course Calendar at www.nyp.edu.sg/pdc.

Please note that application will not be processed without the receipt of the supporting document by the Application Closing Date. Candidates without the Company Sponsorship form will be regarded as self-sponsored.

Key Contacts

For course enquiries, please contact
Amarjit Kaur
Course-Coordinator for Advanced Diploma in Sonography
E-mail: Amarjit_SARDUL@nyp.gov.sg.
Tel: 6550 1365