

# M.S. in Minimal Access Surgery

Internationally Recognised by

## World Association of Laparoscopic Surgeons



**World Association of Laparoscopic Surgeons**



Robotic Training is endorsed by Intuitive Surgical  
incorporation da Vinci Surgical System, USA.

Accredited internationally by  
International Accreditation Organization, Houston, USA



- Identify appropriate outcome measures for safe laparoscopic and robotic surgery.
- Understand the contribution of health economics in surgical outcomes research.
- Develop appropriate level of skill to perform safe laparoscopic and robotic surgery.

## AIMS & OBJECTIVE OF COURSE

The aims of the course are:

- 1) ***Provision of a comprehensive fundamental knowledge base achieved by structured modular teaching.***  
This comprises delivery of lectures and practicals, clinical observation, guided individual study, discussion, feedback, assessment and remedial action.
- 2) ***Acquirement of endoscopic surgical skills to an advanced level***  
Full understanding of the clinical relevance of the theoretical and practical knowledge gained. This comprises clinical observation at out-patients, theatre and ward rounds, attendance at clinical meetings and use of the theatre link.
- 3) ***Competence in information technology, study design, statistics, and critical analysis,***  
M.S. IN MINIMAL ACCESS SURGERY Course is tested by the production of a literature review, article that should be of a standard to allow publication. All literature review articles will be posted on the institute website.
- 4) ***The Research Project***  
This is the key element to the course. There is a need to provide basic educational needs early in the course, releasing time for study and writing, later in the academic year.
- 5) ***Skill acquisition***  
Skills will be taught formally, to a level where competent students can participate in the teaching process. Skills will also be gained carrying out the research topic, and assisting others with theirs.
- 6) ***To promote enthusiasm for safe minimal access surgery***  
The application of MAS skills and theory is based on an approach designed to minimise risk as far as possible. Throughout the course patient safety, and optimal care are emphasised, and provide a structure that can, and should, be applied to the individuals' continuing professional development. Of equal importance is the concept that graduates should act as ambassadors for minimal access surgery, continue to be actively involved in its development.
- 7) ***Integration with others***  
Interdisciplinary collaboration, and co-operation with other hospitals, educational and professional institutions is actively promoted.
- 8) ***Development of teaching skills***  
Following graduation, the successful student should be able to enthusiastically teach the skills and concepts of minimal access surgery.

Curriculum of M.S. IN MINIMAL ACCESS SURGERY Course:

The Masters in Minimal Access Surgery consists of eight core modules:

1. Safety in Minimal Access Surgery including Robotic Surgery (10 Credit)
2. Ergonomics of Minimal Access Surgery (10 Credit)
3. Visual Technology in Minimal Access Surgery (10 Credit)
4. Instrument design in Minimal Access Surgery (10 Credit)
5. Tissue approximation in Minimal Access Surgery (20 Credit)
6. Dissection techniques in Minimal Access Surgery (20 Credit)

7. Clinical Application of Laparoscopic and Robotic Surgery (40 Credit)
8. Research Dissertation (40 Credit for Thesis)

The course modules comprise: research methods, information technology, statistics and presentation techniques, ergonomics and human reliability analysis, visual technology, safe endoscopic practice, access and tissue approximation, modes of dissection, flexible endoscopy, laparoscopic oncological survey, and clinical application of specific techniques.



The Course will be assessed by literature review, oral presentation, practical skills assessment and research dissertation. The course requires submission of an assignment at the end of each module and completion of a research project. Master's participants complete a thesis 40 credit as core part of the M.S. programme. As a Master's student, you will complete a comprehensive examination at the conclusion of your academic coursework. You will prepare a formal thesis proposal, complete the thesis project, and prepare the manuscript for faculty review. You will also complete an oral review of thesis at the conclusion of the research review.

The aggregated result of assignments represents 50% of the overall course requirements. The remaining 50% comes from submission of the research project, which is assessed by a supervisor and an external examiner. Participants may be required to provide clarifications or corrections. If a dissertation falls short of the exam criteria, a viva may be required.

#### METHOD OF STUDY:

In the first three months, taught and clinical modules will be covered at World Laparoscopy Hospital, Gurgaon, NCR Delhi, India. The participants have the opportunity to help consultants with laparoscopic procedures in theatre at different hospitals in Delhi. In addition, 100 hours of practical instruction must be attended, covering the full range of laparoscopic skills.

This is followed by eSTEP, an on-line facility for the Surgeons in Training Education Programme (STEP) as followed by Royal College of Surgeons of England. eSTEP has been set up to add a further dimension to the training programme through providing a medium for communication and an information resource for trainees anywhere in the World. eSTEP aims to create a vibrant, on-line community for trainees and their tutors, enabling them to share experiences and maintain regular contact with the College. eSTEP will also provide access to all the resources of the College library, as well as links to reviewed surgical web sites and educational resources. Trainees will also have access to materials that cannot be printed in the STEP manuals, such as video and image banks and access to on-line journals.

The research project will be conducted by candidates at their home country with direct online modules on dedicated website of World Laparoscopy Hospital under direct supervision of University. The dedicated Master area of web site will provide a forum for on-line discussion with peers and experts creating essentially an on-line tutorial. It will also be an invaluable information resource. eSTEP has greatly greatly

enhanced our international reputation as a leader in the field of minimal access surgical training. The quality of eSTEP of World Laparoscopy Hospital is at par with the eSTEP training of Royal college of Surgeons of England.

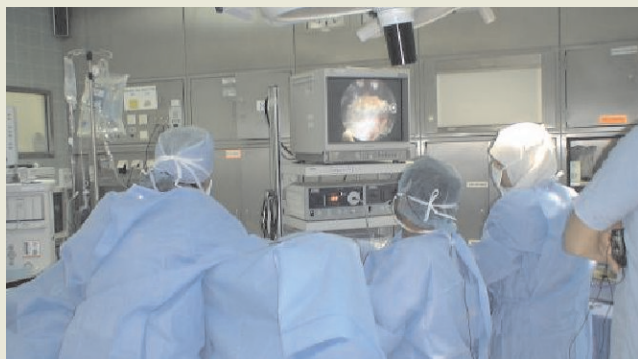
The Degree course of MAS can be divided under four distinct areas:

- [A] Clinical observation and study
- [B] Taught Modules and Clinical Observation
- [C] The Research Dissertation
- [D] The Practical Skills Assessment

#### A CLINICAL OBSERVATION AND STUDY

The clinical attachment is an important aspect of the course, which anchors theoretical knowledge and practical skills in a clinical context. The clinical experience provided by the M.S. degree course is limited to observation and assisting only. There is no facility for students to actively participate in patient care without supervision. In exceptional circumstances, and only if the student has the necessary qualifications and registration, and the full endorsement of Head of the department, will short periods of appropriate direct clinical experience be considered. The spectrum of clinical observation also include out-patient and ward based activities, to facilitate understanding of presentation, diagnosis, selection, consent and outcome related to safe surgical practice and minimal access surgery.

The student should be exposed to a wide range of MAS including laparoscopic, thoracoscopic, retroperitoneoscopic and endoluminal procedures. This should not be limited to general surgery or gynecology, but should include sessions undertaken by other allied specialties.



The student will be required to keep a learning diary (log book). This diary will form part of the assessment and this material will then be incorporated into the assignments relating to theoretical teaching. Students will be expected to discuss their experience with their peer group, and complete their clinical learning diary, to position the theoretical and practical elements of the course in a clinical context.

This meeting will also function as a vehicle for the allocation of students to clinical sessions, to ensure a fair and uniform opportunity without placing undue pressure on the resources available. Candidates would be able to observe minimal access surgery, on a regular basis. This would be best achieved for a large group, by utilizing the theatre link for regular observation, which will be timetabled and supervised. Encouragement would be given to allow them to observe minimal access techniques in other specialties, particularly where this would add to their knowledge and understanding.

It is hoped that their skills could be developed to a level whereby they could act as course demonstrators, and in turn improve their own teaching skills.

## B. Taught Modules & Clinical Observation

The assessment techniques utilised for the modules have varied according to subject matter, and have included written assignments, literature reviews, project reports, oral presentations and norm referenced skills assessments.

The assignment design will encourage the demonstration of an understanding of how the theoretical aspects of the subject are integrated into clinical practice. Assessment of clinical observation is embedded in the assignments for the core modules as well as the presentation of the learning diary. The student will be asked to illustrate his or her work with examples from observed practice and to highlight the relevance of the theory to practice. In addition the student should demonstrate how his or her research topic is relevant to the advancement of the practice of minimal access surgery.

Students must pass each assessment in order to qualify for their MMAS degree. Students failing to meet the required standard at first submission of an assignment will have one opportunity to re submit

## C. The Research Dissertation

Each individual student is invited to submit a proposal for their research project at the start of the course. The initial project interview should take place within 2 weeks of the start of the academic year, with a further 2-4 week period to allow the student to develop and refine their chosen topic.

1. Relevant to MAS
2. Original
3. Achievable within constraints of scope, time and finance
4. Statistically sound
5. Publishable in peer review journal

In the event of the student not being able to formulate a satisfactory project, a choice of potential topics will be offered. Once the topic has been decided, an appropriate research supervisor will be allocated.

Candidates will be expected to present their research progress periodically throughout the academic year. A brief written report of 500 words, describing progress, difficulties, and expected milestones, should be submitted to the Director every 10 weeks. Full guidelines for the thesis are given in a separate document, "Thesis rules, regulations and format", which is issued to the students at the start of the degree course.

### SUBMISSIONS

All assignments, including the Thesis, will be submitted to the Associate Director, who will then distribute these to the appropriate persons for marking. Assignments should be submitted in electronic form, on floppy disk or CD. It is the responsibility of the individual student to retain a backup copy. In the case of non-written assignments, such as presentations, the relevant computer files should be submitted.

The research dissertation will account for 50% of the marks. Marks will be allocated to:

1. The research plan, relevance, feasibility, clarity, validity
2. The literature review, adequate and critical coverage
3. Research question and appropriate methodology

4. Demonstration of analytic and critical skills
5. Presentation
6. Clear and valid conclusions
7. Concise but appropriately detailed presentation within the set word limits

The thesis should be between 15,000 and 25,000 words in length and conform to the presentation and format specifications given in the document "Thesis rules, regulations and format".

It will be assessed by two internal markers and an external examiner in accordance with the normal code of practice and utilising the standard report form.

#### D. THE PRACTICAL SKILLS ASSESSMENT

The practical skills assessment accounts for 20 of the available marks. The marked assessment will be the final practical skills assessment. There will be three prior assessments which will guide the student as to their progress, strengths and weaknesses.

Level of student achievement on assessment tasks and completion rates with

- comparison across modules
- Follow up questionnaire to graduates one year post qualification for final evaluation
- Research published
- Student attendance
- Number of enquiries from potential students, number of application and enrolments
- Analysis of previous experience and career aspirations of students
- Formal metrics analysis of selected acquired surgical skills
- Critical analysis of operative technique

#### RESOURCES

A number of the resources of the Surgical Skills Unit will be available to the students. These will include basic computer resources and access to the computer network, the surgical video library, and a collection of specialised textbooks and journals. In addition the practical laboratory, standard endoscopic equipment, and reality simulators will be used to gain practical skills.

#### RULES AND REGULATIONS

1. This course undertaken over a period of one calendar year commencing in the month of admission.
2. There is no provision for any clinical responsibility as a component of the course.
3. Clinical teaching is limited to observation only, with the exception of the research element, which may involve the supervised collection of patient data.
4. There is no provision for the continuation of a research project into a further academic year, though it is envisaged that in exceptional circumstances this may be possible with the agreement of the course director.
5. There is no provision for re-examination of candidates in the event of failure to complete, or pass assessments.

## SPECIFIC GOALS

This course aims to provide a period of study and academic research during which the student may acquire a deeper knowledge and understanding of minimal access surgery, the safe deployment of associated technologies and the implications of its introduction into health care services. In addition the course aims to enhance the student's analytical and critical abilities, competence in research methodology, presentation skills and the use of information technology.

On completion of the M.S. course the student should be able to:

- Apply the basic principles of the ergonomics of MAS techniques in varied clinical situations
- Understand and demonstrate the safe use of gas and other devices to provide an MAS working space.
- Understand the effects on tissues of various energy sources used in surgery e.g. cryotherapy, laser, electrosurgery, radio frequency ablation etc.
- Demonstrate safe dissection using various energy delivery systems in the laboratory setting.
- Understand the indications, contra-indications and dangers of the use of various energy sources in clinical practice
- Use current visualisation systems and understand the principles underlying alternative systems being developed.
- Demonstrate an appreciation of visual physiology and psychology relevant to MAS surgery
- Demonstrate competence in basic and advanced MAS skills using simulations
- Demonstrate an understanding of the principles of tissue approximation and the advantages and disadvantages of various methods.
- Produce good quality visual aids to support teaching and professional presentations
- Demonstrate competence in presentation
- Demonstrate critical and analytical skills
- Demonstrate the ability to plan, implement and present a research project
- Use information technology and statistical packages to support academic activities
- Demonstrate an awareness of the clinical challenges of advanced MAS surgery and the issues involved in the development and evaluation of new procedures
- Apply basic educational concepts to skills training and assessment on minimal access surgery
- Carry out an analysis of the financial issues surrounding the introduction of MAS surgery
- Demonstrate an understanding of the oncological issues of MAS surgery and current evidence relating to this
- Demonstrate an understanding of the processes involved in the development and manufacture of new surgical instruments
- Demonstrate an appreciation of the anatomical issues arising from the altered view of the surgical field

## M. S. THESIS SUBMISSION

The candidate has to maintain day to day log book of their clinical attachment signed by their laparoscopic instructor and it should be sent by mail to Universities Delhi head office, A/14 Paryavaran Complex, South of Saket, New Delhi –110 030. The Course Director of this course is Prof. R. K. Mishra, Professor and Head of Minimal Access Surgery TGO University.

M.S. in Minimal Access Surgery is one year full-time research project and practical laparoscopic and robotic skills practice followed by clinical attachment and thesis submission. The expected student workload in



terms of the total time involved, including lectures, tutorials, practical experience, independent study, reading and work for assessment will average 20 hours face to face and 20 hours homework every week.

The course is a full time programme. Candidate has to spend initial three month training at World Laparoscopy Hospital, Gurgaon, NCR Delhi. During this three month they will get extensive "Hands On" training at laparoscopic lab of World Laparoscopy Hospital. They will also get clinical attachment in various hospitals in New Delhi including World Laparoscopy Hospital. This three month extensive training will be followed by 9 month clinical attachment in their respective country or state. WALs members are in almost all country of the world and the supervisor of the clinical attachment will be decided by WALs and the The Global Open University.

The course runs over one academic year from the date of admission. There are three terms, followed by three months for dissertation writing. The topic for a thesis should be carefully chosen by candidate, either from an area of intended specialization or in preparation for an MD or MS thesis. A laboratory based topic generally gives participants a higher degree of control than a clinical project.

The course requires submission of an assignment at the end of each module and completion of a research project. Every week participants have the opportunity to help consultants with laparoscopic procedures in theatre. In addition, three hours of practical instruction must be attended, covering the full range of laparoscopic skills. Teaching skills are developed by assisting in various laparoscopic courses held by the World Laparoscopy Hospital.

### COURSE ADMISSION & RECOGNITION

Admission to M.S. in Minimal Access Surgery Programme starts from 1 st of each month. There are only 2 seats in this course each month. The Master in Minimal Access Surgery Courses is university recognized course, endorsed by World Association of Laparoscopic Surgeons and TGO University. Admission is on first come first serve basis.

Candidates must hold M.B; B.S or equivalent and at least 3 years post-registration experience in General surgery or Gynecology or degree of M.S or M.D for Indian candidates. This One year master's course is designed for medical graduates who have postgraduate experience in surgery or gynecology with an interest in minimal access surgery.

The World Laparoscopy Hospital is based at New Delhi and Gurgaon and is an International training center with expertise in providing practical courses in laparoscopic surgery. The degree is awarded by the government recognized university after successfully completing the course designed by World Association of Laparoscopic Surgeons. The course follows the post residency programme guidelines of SAGES.

The candidates have to take final exam evaluation of thesis at New Delhi under the supervision of the University. After successful completion of the course the candidates attend the convocation of their degree.

### UNIQUE ADVANTAGES OF M.S. COURSE

The course provides a period of study and academic research to gain an in-depth understanding of Minimal Access surgery and the safe implementation of associated technologies. Participants are expected to develop

their research methodologies, presentation skills, and analytical and critical abilities, and to gain a degree of competence in Minimal Access Surgery. Admission to higher surgical training posts is highly competitive, and the gives a competitive advantage. Dissertations, which are prepared as part of the course, are regularly published by graduates or form the basis of presentations at national and international venues.

The course definitely improves the candidate's ability to apply the fundamental ergonomics of laparoscopic techniques in a varied clinical environment. Minimal Access Surgical skill of candidate will definitely improve par excellence after this Master course. During training in M.S. program, responsibilities of candidate will increase with experience, capability and performance. There is opportunity to increase your surgical, supervisory and teaching and administrative skills.

The course is highly educational and incorporates the latest in MAS technology. There is a practical skills element to the course, which gives you hands-on simulator training and clinical attachment with expert Laparoscopic surgeon and is probably the most enjoyable part of the course. The course gives you an advantage on the competitive specialist post application in various job and posting because you have super specialized master degree from government recognized university and looks great on your CV.

### COURSE FEE

The fee for Masters in Minimal Access Surgery Course is 20,000 USD for Overseas and Non Resident-Indian candidate and 4, 95,000 for Indian Surgeons and Gynecologists. There is initial registration charge of 10,000 INR or 200 USD. Rest of the fee will be payable at the time of joining the course. This initial Registration charge will be deducted from the total fee.

Please note that living expenses (Food, Travel, Stationary, and Laundry etc.) are not covered in the course fee. There is no extra charge to utilize hospital resources like internet, laparoscopic instruments, O.T. Dress, Library, Videos; DVDs.

### AWARD OF M.S. :

The award of the MASTER IN MINIMAL ACCESS SURGERY from The Global Open University will be conferred on satisfactory completion of:

1. All assignments,
2. A practical skills OSCE
3. The submission of thesis.

Certificate will be issued within a week of successful completion of the course.

### Peer Group Meetings

These meetings will take place on a regular weekly basis, supervised by the Associate Director. They will be of 2-3 hour duration and will include;

- Journal Club
- Peer review discussion
- Video review
- Audit program

A register of attendance will be kept. These meetings will form the basis of a regular student report, or learning diary, that must be kept regularly up to date & which forms one of the assignments.

# COURSE MODULE

(Module 1: Research Method)

Content

Quantitative and Qualitative Research Strategies. The Scientific Method. Qualitative methodologies with medical examples. Basic statistics and strategies for analysing data. Appraising the literature. Research ethics. Use of databases and spreadsheets, graphical presentations. Scientific presentations. Writing scientific papers or a thesis.

## OBJECTIVE :

On completion of this module the student should be:

- Aware of the important of the surgeon as investigator, the evolution of surgical science, its diversity & the role of dialogue in scientific progress.
- Able to find and appraise new information using library and computer based systems
- Able to critically assess a surgical paper
- Have experience of different ways of storing and sorting information
- Understand the variety of research methodologies used in surgery, their strengths and weaknesses
- Able to formulate a research question and choose an appropriate method to answer this question
- Understand and be able to apply basic statistical methods
- Understanding the power of studies and what conclusions can be justified on the evidence presented
- Demonstrate an understanding of the ethical consideration of scientific, and in particular, surgical research
- Appreciate the responsibilities of the researcher, what is misconduct, how misconduct effects the validity of knowledge.
- Understand the issues surrounding authorship and peer review
- Understand the format and requirements for writing a scientific paper
- Demonstrate competence in preparing for and giving an oral presentation of surgical topics and data
- Able to produce visual aids (e.g. Powerpoint, 35mm slides, video) to an acceptable standard for international presentation.
- Aware of the importance of time management, the use of deadlines, budgeting and how to interact with a supervisor.

## (MODULE 2: SAFETY)

Content

The nature and estimation of risk. Human performance and perception of risk. Assessing risk and minimising risk. Error rates. The 'incident pit'. Health and Safety. First time accuracy. Informed consent. Appropriate responses when problems or complaints occur. Communications. Negligence. The impact of co-workers.

## OBJECTIVE :

On completion of this module the student should be able to:

- Assess risk and communicate this assessment
- Design systems to minimise hazards
- Understand the impact of human psychology on risk perception, precaution taking etc.

## (MODULES 3 : ERGONOMICS)

### Content

General principles of ergonomics Task analysis  
Objective assessment of task performance Limitations in minimal access surgery Ergonomics of theatre & endoscopic set-up Ergonomic principals of instrument design Ergonomic principals of tissue dissection  
Ergonomic principals of intracorporeal knot tying and bowel suturing Tissue retrieval  
Laparoscopic assisted surgery  
Analysis of surgeon's movement during minimal access surgery Impact of technology on practice in minimal access surgery Assessment of psychomotor skills in minimal access surgery

### OBJECTIVE :

On completion of this module the student should be able to:

- Apply the established principles of ergonomics to theatre set up and instrument placement in practical situations
- Demonstrate an understanding of the effect of the laparoscopic approach on the surgeon's movements and performance
- Carry out a task analysis and assess endoscopic performance
- Assess the impact of new technology or instrumentation on surgical practice
- Appreciate what strategies need to be applied during the introduction of new technology

## (MODULE 4 VISION)

### Content

Review of the physiology of stereoscopic vision. Introduction to visual psychology. Differences between the visual processing of real images, pictures and other planar representations. Perceptions of colour, brightness, space. Monocular depth clues. Parallax. The Vistral Effect. History of endoscopic imaging. Principles of rigid and fibreoptic endoscopes. Today's endoscopic visual system and its component elements - variety of telescopes, camera technology, light source and image display. Optical assessment of video -endoscopes. Video and computer generated images. Video formats. Digitisation. Types of endoscopic display system - 2 and 3 D, current and future e.g. suspended image. Use of computer tomography, magnetic resonance imaging and intra-operative ultrasound. Images for teaching and presenting.

### OBJECTIVE :

On completion of this module the student should be able to:

- Demonstrate an understanding of human visual physiology and psychology
- Appreciate the effects of indirect viewing on perception and performance
- Appreciate the effects of 2 and 3 D images on perception and performance
- Use a range of endoscopic visual systems effectively and efficiently
- Understand the technical features of current endoscopic viewing systems
- Capture images for future use and understand their requirements for presentation

## (MODULES 5 : INSTRUMENT DESIGN)

Considerations in technological development and instrument function and design

Content

The design process  
Initial research and identification of functional requirements Prototype modelling, refinement and manufacture  
Relationships with industry  
Instrument manufacture

### OBJECTIVE :

Knowledge of the function of the technology group Knowledge of confidentiality agreements Knowledge and criticism of current projects

## (MODULE 6: TISSUES)

Content

Access Techniques  
Pneumoperitoneum (Insufflation techniques, Insufflation gases, Insufflation volume and rate, Intra-abdominal pressure). Patient positioning. Potential complications - cardiac performance during MAS, haemodynamic alterations with pneumoperitoneum, effects, other systemic complications. Inflammatory and metabolic response to MAS vs. Open surgery. Alternatives to pneumoperitoneum. Anaesthetic management during endoscopy (laparoscopy and thoracoscopy) including position, monitoring, anaesthetic techniques, pain control.  
Ligation and Approximation  
Sutures and suture materials - history, basic principles, knots, suture characteristics, effects of ligation, the physics of ligation. Endoscopic ligation. Nonabsorbable clips. Absorbable clips. Ligation devices (Stapling and stapling devices: historical development, principles, equipment, advantages and disadvantages). Endoscopic suturing: various techniques.

### OBJECTIVE :

On completion of this module the student should be able to:

- Insert a Veress needle with appropriate technique and set up and operate an insufflator
- Perform various techniques for creating a pneumoperitoneum and discuss their advantages and disadvantages
- Describe the haemodynamic and other changes associated with a pneumoperitoneum and the effects of pressure, flow rate, volume, and the nature of gas used
- Discuss the alternatives to pneumoperitoneum and the design of associated systems.
- Effect of pneumoperitoneum or thoracoscopy on anaesthetic management
- Describe the nature, advantages and disadvantages of various clipping and stapling devices and demonstrate their safe use
- Apply extracorporeal knots endoscopically, suture and perform a microsurgical knot intracorporeally

## (MODULES 7 : DISSECTION)

### Content

Principles and practice of electrosurgery: history, terminology, equipment, current characteristics, tissue effects, endoscopic delivery, hazards.  
Cryotherapy: principles, tissue effects, hazards, endoscopic delivery  
Lasers: principles, types, equipment, tissue effects, hazards, endoscopic delivery  
Ultrasound: diagnostic and therapeutic: Principles, frequencies, energies, tissue effects, hazards, endoscopic delivery.  
Other modalities such as radio frequency ablation

### OBJECTIVE :

On completion of this module the student should be able to:

- Explain the technical features of the various energy generating modes
- Understand the tissue effects, both local and systemic, and the differences and similarities of the various modes of dissection.
- Be aware of the specific hazards associated with each mode and how to minimise the danger to the patient and staff
- Understand the method of clinical delivery and the rationale for associated routines.

## (MODULE 8: CLINICAL APPLICATION)

### Content

This module is concerned with the integration of clinical, theoretical and technical aspects of endoscopic surgery for benign and malignant disease.

Study materials will include the use of materials from the Department video library, to illustrate techniques and disease to include:

- Pneumoperitoneum and abdominal tumours. The theoretical considerations of gas circulation, smoke generation, port site recurrence - causative theories and consequences. Immunological changes and comparative tumour behaviours.
- Diagnostic laparoscopy for staging, liver ultrasound, biopsy, and in ascites
- Operative laparoscopy for colorectal resection, liver metastases, tumour ablation (hot and cold) and palliative procedures
- Rigid endoscopy such as transanal endoscopic microsurgery or bladder and prostate surgery
- Flexible endoscopy including procedures such as colonic polypectomy, laser ablation and photodynamic therapy
- Thoracoscopy for diagnosis, lung resection or oesophageal mobilisation
- Stenting procedures in the oesophagus, colon and biliary tract

### OBJECTIVE :

On completion of this module the student should be able to:

- Discuss the benefits and disadvantages of the use of a variety of minimal access techniques for the diagnosis and treatment of a range of tumours
- Differentiate the different issues associated with the various minimal access approaches to tumours
- Define the skills needed for different modalities of treatment and their own level of competence

- Demonstrate an understanding of the different tissue and systemic effects of various ablative methodologies.
- Demonstrate an understanding of current research questions and the significance of existing evidence.

### TEACHING METHODS

A series of 7 tutorial sessions will be held to cover each subject area. These will take the form of presentations, group work and practical exercises. Further reading will be recommended for personal study. The optional modules are intended to be fairly self-directed. The student is expected to gain a general understanding of the subject matter of the module by attendance at tutorials, directed reading and video viewing, and attendance at live operating sessions. They will then be expected to carry out a more intense study of one aspect of relevance to their own interests following discussion with the course facilitator.



*For further information please contact:*

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