SCIENTIFIC METHODOLOGY IN CATARACT, REFRACTIVE AND CORNEAL SURGERY

University Certified Advancement Course

Director:

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SUMMARY:

The course of the Scientific Methodology in Cataract, Refractive Surgery and Corneal diseases is a 25 credits program, conducted over the period of one academic year, as two semesters course. The fall semester consists of 3 modules of a total of 10 credits, which are: Basic research methodology, refractive surgery and cataract surgery. After the completion of the research methodology module the student will be assigned to be under supervision of one of the invited world class international tutors, to apply the knowledge he acquired, through investigating a one of the recent topics in relation to advances in refractive surgery through a list prepared by the teaching board of the course. The spring semester will cover 9 credits of the following modules: fundamentals of corneal surgery for refractive cataract surgeons, good clinical practice guidelines, and practical clinical and surgical guidelines.

The course material is prepared by a team of national and invited international lecturing professors and consultant ophthalmologists, comprising a comprehensive learning channel of all aspects of modern refractive surgery science and related disciplines.

As this program is directed to both the national and international refractive surgeons all teaching materials are presented and conducted in English, and the program is completely conducted as an online e-learning learning modality, representing a flexible modern and easy accessible learning environment.
1- ACADEMIC AND SOCIAL JUSTIFICATION AND INTEREST ABOUT THE TITLE:

The field of ophthalmology had witnessed great advances during the last decade, parallel to the out breaking technology innovations, especially in the field of medical lasers and devices. From that, refractive aspect of vision care became cornerstone of any procedure or invention, with ophthalmologists around the world seeking perfectionism of vision, in terms of quality rather than quantity, giving rise to the ever interesting and challenging specialty of refractive surgery.

Recently, modern ophthalmology, has expanded the spectrum, not only to include refractive error correction procedure, but also all other procedures related to the cornea; as corneal transplantation or lens of the eye, as cataract extraction surgery, which evolved to be in great part a combined therapeutic and refractive procedures, due to the state of the art advancements both in surgical techniques and in ocular implants.

In the course of the title: SCIENTIFIC METHODOLOGY IN CATRACT REFRACTIVE AND CORNEAL DISEASE, we provide a comprehensive teaching curriculum and learning environment, applying an international model, from covering the basic science related to refractive surgery such as; ocular anatomy, physiology and optics, till the highlights of the recent advanced methods and outcomes in refractive correction surgeries along with topics of cataract and corneal management of refractive interest.

As, research and evidence based medicine, is now the core of generating guidelines and preferred practice patterns in refractive surgery, we dedicated, an essential part of the curriculum for the teaching of basic methodology of medical research, outcomes analysis, SPSS basics, and good clinical practice in clinical trials under Helsinki guidelines, with a final project of the title, in which the student will be able to apply the research skills he acquired along the course with the ophthalmic knowledge obtained under the supervision of a group of invited world class international refractive surgeons and researchers, as a starting point or update of integrating research in his/her future practise and an ophthalmologist or refractive surgeon.
As previously mentioned, the advances in communication, had made the medical community an international one, and greatly facilitated the process of learning through the world wide web; internet, giving rise to a new more accessible and flexible way of learning which is the online education, which ensure the delivery of educational programs such this title to a larger number of ophthalmologist, through a flexible modality that suits the rather busy and overwhelming medical profession.

In creating this title, we found that part of maximizing the benefit of Spanish ophthalmologist and also delivering this interesting educational program to a large number international surgeons, is to conduct this online title in the more internationally recognized English language, specially in the field of publications and medical journals. In this way, we enable Spanish ophthalmologist to get more international exposure, while delivery, one of the high quality teaching programs of the University of Miguel Hernández to interested international ophthalmologists at their convenience.

Clear vision and sight is one of the essentials, of conducting a full good quality of life, enabling any person, to be an active part of his community and a productive and creative member of both his local and the international society, for that we believe that training ophthalmologists with such comprehensive well prepared educational program, will help qualify vision care providers, through structured management guidelines, on both national and international levels.
2- COURSE OBJECTIVES:

- Introducing students to basics of research methodology and data analysis
- Providing comprehensive basic science review of material related to refractive surgery
- Providing a didactic teaching program, in fundamentals and advances of refractive surgery
- Focus of refractive related topics in cataract surgery
- Focus of corneal disease management from refractive prospective
- Provide an outline of recent essential surgical skills, investigations and instrumentations needed by refractive surgeon
- Integrated the concepts of evidence based medicine, international practice guidelines in the management
- Training on good clinical practice in relation to clinical trials
- Creating online interactive channel between students and a panel of world class international consultants and professors
- Integrating students in hands on research projects related to the theme of the title
- Empowering the importance of continuous medical education and self conducted education
- Helping students achieve a level of confidence in the theoretical background needed for them to establish a solid practical practice or training
- Creating active channels on the method of analysis, management and counselling of challenging clinical situations
- Training safe surgeons be focusing on methods of proper detection and management of complications
- Focusing on ethical prospective, patients’ rights and education
3- STRUCTURE OF THE STUDIES:

Outlines:

- Faculty of Medicine
  San Juan Camps
- ECTS Credits: 25
- Duration: 1 academic year
- Field: Vision science
- Specialty: Ophthalmology
- Area of interest: Refractive surgery
- Instruction: Online E-learning
- Language: English
- Type: Clinical / Research
- Number of Courses: 6 module all required
- Final project: Yes (1) required

- Module One: Basic Research Methodology:

  **Education Objective:** As research is an essential part modern health care management, specially in the era of evidence based medicine, refractive surgeon are obligated to be part of investigative projects that demonstrate, their outcomes and experience with modern technologies of refractive surgery, this module presents the fundamental knowledge needed to create and conduct a research project according to the internationally recognized standards and methodology, by peer reviewed journals, including data analysis, this will also be an integral part in the formation of the course final project.

- Module Two: Refractive Surgery:

  **Educational Objective:** This module provides a didactic educational program in two levels; basic level: covering all the essential fundamentals of refractive surgery, from basic science of anatomy, physiology and optics to all aspects of standard refractive surgery procedures for the correction of vision errors. The advanced level; outlines more up to date and innovative refractive concepts in corneal and intraocular refractive surgery with focus on femtosecond laser technology application in this field.
• **Module Three: Cataract Surgery:**

**Educational Objective:** The modern cataract surgery, consider new cataract extraction techniques to be both therapeutic and refractive, in terms that it does not only aim at eliminating the lens opacity but also correcting the preoperative refractive errors. The improvement of intraocular lenses technology made it possible to achieve emmetropia, and even improve the postoperative near vision capacity. This module demonstrate courses of surgical techniques of cataract surgery, with special focus of modern advances in intraocular lenses technologies, also it present some clinical challenges, through case study assignments.

• **Module Four: Fundamental of corneal surgery form refractive prospective:**

**Educational Objective:** This module is not intended to be a comprehensive corneal disease learning module, rather than one that outlines aspects of corneal diseases and surgery that are of interest to refractive surgeons, and how to be oriented on refractive way about corneal management protocols, with a wide range of educational activities focusing on corneal imaging, corneal graft surgery and keratoconus management guidelines and including video gallery and intralase femtosecond application course.

• **Module Five: Good Clinical Practice:**

**Educational Objective:** As a supplementary module to the 1st module of research methodology, the knowledge of good clinical practice guideline and Helsinki declaration principles is an essential part of modern clinical practice, especially refractive procedures including clinical trials and investigative protocols.

• **Module Six: Practical Clinical and Surgical guidelines:**

**Educational Objective:** Based on materials created by the investigation, development and innovation department at the VISSUM institute of ophthalmology. A selected number of standard procedure guidelines in cataract, refractive surgery and corneal surgery, along with surgical principle lectures from the periodic clinical and continuous medical education sessions. This is a self conducted learning module with case study assignments to apply acquired standards and knowledge.
Course Final Project (6 ECTS)

Educational Objective: This will provide hands on practical training for the student to apply all the concepts he/she acquired through all modules of the course, which will prepare him/her to be an active part and conduct future reach and investigative projects, in his career as a clinician refractive surgeon with research interest. Each student with the help of the director and coordinator of the program will be assigned to an invited international tutor to review or investigate a topic of the preset list of topics representing the up to date technologies in the field of refractive surgery, student may start the working on his/her project upon completion of module one and finishing the project protocol as assignment of the module. Student will be asked to give a presentation through a video conference to the director and one judge professor summarizing the work done on this matter, the evaluation of the supervisor and the final grading of the jury on the project presentation, are the measures of accepting the final project in reference to the university bylaws regulating this issue.
4- ACADEMIC REQUIREMENTS AND OTHER CRITERIA FOR SELECTION OF STUDENTS:

As this program is directed to ophthalmologists of special interest in the clinical and research aspects of refractive surgery, the following credential and qualifications is required for applying the program:

1- Medical degree diploma from a recognized medical school, whether national European or international.
2- Completion or enrolment of ophthalmology speciality/residency training with presentation of documentation of completion a minimal one year of training in ophthalmology.

The university may request any further documentation to fulfil admission regulation, given that all procedures are conducted online, including completing on the payment of the course fees, with no need of physical presence of the student to complete the process to facilitate the enrolment of international students.

The student must present curriculum vitae (CV), highlighting is qualifications, educational activities, work and clinical experience and research activities, which will be the bases of selection for the program with the following criteria to be considered:

General Competencies:
1- Good command of English language
2- Excellent computer skills related to carrying out the educational activities
3- Apply learning knowledge to problem solving situations on clinical sense
4- Communication capacity in ethical and professional manner
5- Skill to autonomously improve his/her learning capacity beyond the contents of the course

Specific Competencies:
1- Good clinical experience in the field of ophthalmology
2- Sufficient background of the basics of refractive surgery
3- The urge to conduct health care and scientific activity with ethical consideration
4- The ability to apply analytic thinking in challenging clinical situations
5- The ability to apply evidence based medicine refractive management
6- Possessing standardized practice in terms of diagnosis and management including surgical skills
7- The ability to integrate research as essential part of clinical practice
8- Organizational skills
9- Potential teaching skills and willing to spread knowledge acquired to peer ophthalmologists.