

IN VITRO FERTILISATION (IVF) TRAINING COURSE

As Designed and Certified by the University of Kent, UK

Course Schedule and Outline

Our mission is to bring an awareness of the practice of IVF, genetics and reproductive medicine to anyone who may be interested. It comes as a package of equipment, biological material, learning material, and experts.

Although our IVF course will not train you to be a fully qualified clinical embryologist within weeks (such training is provided in-house in a highly regulated clinical environment and leads to a vocational qualification over 4 years), it is a first step on the ladder to see if it is something that you might want to do in the future. This course can also lead to application for a relevant Master's level qualification (e.g. the Reproductive Medicine: Science and Ethics program at the University of Kent), further professional development for State Registration as a Clinical Scientist with the Health Professions Council and/or membership of the Royal College of Pathologists.

The IVF experience course will give you a realistic expectation of the likelihood of excelling in, and enjoying, this popular career path. It will explore the basics of lab technique and good practice, egg collection and maturation, sperm assessment, insemination, intracytoplasmic sperm injection, embryo grading, assisted hatching, media preparation and cryopreservation. For ethical reasons, biological material in the form of gametes and embryos from non-human model species will be used as a proxy for human material. The course will be taught by experienced scientists in a "hands on" way; indeed, one of the unique selling points of this course is its high practical component, giving a real experience of how an IVF lab works.

Course Aim

The aim of this 9-week course is to give you a basic understanding of how and why IVF is performed. Over the course there will be both theoretical and practical elements enabling you to have hands-on experience with some embryological procedures. The activities will emulate a working IVF lab, following the flow of work required in an IVF cycle starting with collection of the gametes through to fertilization and embryo biopsy. You will be assessed on both theoretical and practical elements of all 6 modules to assess hands-on skills and understanding of the embryological procedures. You will be provided with a lab book in which to take notes during each of the sessions. At the end of the course the lab book will be assessed. It will also be invaluable for the final day assessment examining what has been learned throughout the course.

Course Outline

This 9-week course is made up of both theoretical and practical sessions:

Theory (weeks 1-4):

The theoretical component of this course will be delivered via live webinar tutorials and lecture recordings hosted on an online platform. The course material will be accessible on-demand to you for a period of 4 weeks and must be completed sequentially and prior to the commencement of the practical sessions scheduled for weeks 5 through 9.

Practical (weeks 5-9):

The practical sessions of this course will be delivered via pre-recorded videos (online) and in a lab facility (located in Dubai) over 3 days in week 9.

This Course is made up of 5 modules including the following topics (both theoretical & practical):

- Module 1**
 - 1. Reproduction and IVF
 - 2. Introduction to animal IVF
 - 3. Reproduction and IVF
 - 4. Male & Female reproduction
 - 5. Writing a patient-facing leaflet/talking to patients + assignment
 - 6. Introduction to animal IVF
 - 7. Short documentary – Making babies
 - 8. Basics of reproduction
 - 9. Sperm DNA damage
 - 10. Msc. in reproductive medicine at Kent Uni
 - 11. Replacing lecture & practical classes with online alternatives
- Module 2**
 - 12. Laboratory technique and good practice (General and IVF lab)
 - 13. Andrology theory
 - 14. Procreation, pregnancy and parturition
 - 15. How to maintain your lab book
- Module 3**
 - 16. Meiosis in the oocyte
 - 17. Embryo morphological grading + Assignment
 - 18. Independent Study
 - 19. Culture media
- Module 4**
 - 20. Aspects of time lapse imaging and cryopreservation in research
 - 21. Micromanipulation theory
 - 22. ICSI
 - 23. Cryopreservation theory
- Module 5 (practical)**
 - 1. Animal IVP – methods and tips
 - 2. Andrology practical (basic semen analysis)
 - 3. Sperm preparation for ART procedures
 - 4. Media preparation/setup including pH and osmolality checks
 - 5. Oocyte retrieval, IVM, microscopy and gamete handling
 - 6. Animal IVM
 - 7. Moving zygotes and scoring embryos
 - 8. Cryopreservation hands-on
 - 9. ICSI: how is it performed? Familiarizing with the equipment
 - 10. Group assignment for ICSI
 - 11. ICSI practical in groups

Course Schedule: Theoretical Modules (ONLINE)

Week	Module	Subject	Duration	Faculty
Week 1 Sun 20 Dec	Module 1	Live Webinar - Course introduction and welcome Sunday 20 December @ 7pm GST	30 mins	Prof. Darren Griffin/ Dr Giuseppe Silvestri/
		Reproduction and IVF	40 mins	Prof. Darren Griffin
		Male reproduction	20 mins	Prof. Darren Griffin
		Female reproduction	20 mins	Prof. Darren Griffin
		Writing a patient-facing leaflet/talking to patients + assignment	30 mins	Dr Giuseppe Silvestri
		Independent Study	120 mins	
		Live Webinar – Tutorial Friday 25 December @ 7pm GST	60 mins	Dr Giuseppe Silvestri
Week 1 total			5.5 hours	
Week 2 Sun 27 Dec	Module 1 Cont...	Introduction to animal IVF	120 mins	Dr Giuseppe Silvestri
		Short documentary – Making babies	30 mins	Prof. Darren Griffin
		Basics of reproduction	30 mins	Prof. Darren Griffin
		Sperm DNA damage	40 mins	Prof. Sheryl Homa
		Msc. in reproductive medicine at Kent Uni	10 mins	Prof. Darren Griffin
		Replacing lecture & practical classes with online alternatives	60 mins	Prof. Darren Griffin
		Independent Study	120 mins	
Live Webinar – Tutorial Friday 01 January @ 7pm GST	60 mins	Prof. Darren Griffin		
Week 2 total			8.0 hours	
Week 3 Sun 03 Jan	Module 2	Laboratory technique and good practice (General and IVF lab)	30 mins	Dr Lucas Kiazim
		Andrology theory	60 mins	Dr Giuseppe Silvestri
		Procreation, pregnancy and parturition	40 mins	Prof. Darren Griffin
		How to maintain your lab book	30 mins	Dr Giuseppe Silvestri
	Module 3	Meiosis in the oocyte	60 mins	Ms Maria Serrano Albal
		Embryo morphological grading + Assignment	120 mins	Dr Giuseppe Silvestri
		Independent Study	120 mins	
Live Webinar – Tutorial Friday 08 January @ 7pm GST	60 mins	Prof. Darren Griffin		
Week 3 total			8.5 hours	
Week 4 Sun 10 Jan	Module 3	Culture media	60 mins	Dr Giuseppe Silvestri
		Blastocysts In 2019 – New insights into Mechanisms of Formation and Function	40 mins	Dr Giovanni Coticchio
	Module 4	Aspects of time lapse imaging and cryopreservation in research	35 mins	Dr Kate Harvey
		Micromanipulation	60 mins	Ms. Mayyas Jaweesh
		ICSI	60 mins	Mr Shadi Khalil
		Cryopreservation theory	60 mins	Ms Maria Serrano Albal
		Independent Study	120 mins	
Live Webinar – Tutorial Friday 15 Jan @ 7pm GST	60 mins	Prof. Darren Griffin		
Week 4 total			8.5 hours	
Theoretical Total			31 Hours	

Course Schedule: Practical Videos (ONLINE)

Week	Subject	Details	Duration	Faculty
Week 5 Sun 17 Jan	IVF Lab Tissue Culture	Video 1: Aseptic technique & water	20 mins	Ms Mayyas Jaweesh
		Video 2: Media preparation & culture conditions	20 mins	Dr Giuseppe Silvestri
		Video 3: Equipment	20 mins	Ms Mayyas Jaweesh
		Video 4: Quality control & protocols	20 mins	Ms Mayyas Jaweesh
		Live Tutorial: Friday 22 January @ 7pm GST	30 mins	
		Week 7 total	2.5 hours	
Week 6 Sun 24 Jan	Semen Analysis & Preparation	Video 1: Semen collection, seminal fluid analysis & sperm function testing	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 2: Sperm preparation methods for treatment cycles	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 3: Sperm freezing and thawing	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 4: Epididymal & testicular sperm and retrograde ejaculation	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Live Tutorial: Friday 29 January @ 7pm GST	30 mins	
		Week 8 total	2.5 hours	
Week 7 Sun 31 Jan	Oocyte Retrieval	Video 1: Retrieval	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 2: Disposables and tools	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 3: Grading of oocytes	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 4: Insemination procedure	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Live Tutorial: Friday 05 February @ 7pm GST	30 mins	
		Week 9 total	2.5 hours	
Week 8 Sun 07 Feb	Fertilisation, Embryo Culture, Embryo Transfer and Cryopreservation	Video 1: Fertilisation Check	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 2: Embryo Culture & Grading of Embryos	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 3: Embryo Transfer	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Video 4: Embryo Vitrification	20 mins	Ms. Mayyas Jaweesh & Mr. Shadi Khalil
		Live Tutorial: Friday 12 February @ 7pm GST	30 mins	
		Week 10 total	2.5 hours	
		Practical Video Total	10 hours	

Course Schedule: Practical Sessions (Classroom) *In the best interests of all participants health & safety and due to current COVID travel restrictions the dates of the practical sessions of this course are to be advised.*

Day		Subject	Length	Faculty
Day 1 TBA – To be advised	8.00am-8.30am	Welcome and Introduction	30 mins	Mr Shadi Khalil
	8.30am-9.00am	Animal IVP – methods and tips	30 mins	Dr Giuseppe Silvestri Mr Shadi Khalil
	9.00am-11.00am	Andrology practical (basic semen analysis)	120 mins	Dr Giuseppe Silvestri Mr Shadi Khalil
	11.00am-11.15am	REFRESHMENT BREAK	15 mins	
	11.15am-1.15pm	Sperm preparation for ART procedures	120 mins	Dr Giuseppe Silvestri Mr Shadi Khalil
	1.15-2.00pm	LUNCH BREAK	45 mins	
	1.00pm-3.00pm	Media preparation/Clinical Practice: Theory & practice	120 mins	Mr Shadi Khalil Ms Mayyas Jaweesh
	3.00pm-3.15pm	REFRESHMENT BREAK	15 mins	
	3.15pm-5.30pm	Oocyte retrieval, IVM, microscopy and gamete handling	135 mins	Mr Shadi Khalil Ms Mayyas Jaweesh
Day 2 TBA – To be advised	8.00am-8.30am	Animal IVM	30 mins	Mr Shadi Khalil
	8.30am – 10.00am	Moving zygotes and scoring embryos	90 mins	Dr Giuseppe Silvestri Mr Shadi Khalil
	10.00am-10.15am	REFRESHMENT BREAK	15 mins	
	10.15am-11.45am	Cryopreservation hands-on	90 mins	Dr Giuseppe Silvestri Mr Shadi Khalil
	11.45am–12.45pm	ICSI: how is it performed? Familiarizing with the equipment (explain different parts of micro manipulator and its function)	60 mins	Dr Giuseppe Silvestri Mr Shadi Khalil
	12.45-1.30pm	LUNCH BREAK	45 mins	
	1.30pm-2.00pm	Group assignment for ICSI	30 mins	Mr Shadi Khalil
	2.00pm-3.30pm	ICSI practical in groups (30 mins ea)	90 min	Mr Shadi Khalil
	3.30pm-3.45pm	REFRESHMENT BREAK	15 mins	
3.45pm-5.30pm	ICSI practical in groups (30 mins ea)	90 mins	Mr Shadi Khalil	
Day 3	9.00am-10.00am	Science communication assignment (leaflet) hand in- discussion	60 mins	Mr Shadi Khalil

TBA – To be advised	10.00am-11.30am	Feedback and Completion of lab books (hand in)	90 mins	Dr Giuseppe Silvestri Mr Shadi Khalil
	11.30am-11.45am	REFRESHMENT BREAK	15 mins	
	11.45pm-12.45pm	Feedback and Completion of lab books (hand in)	60 mins	Dr Giuseppe Silvestri Mr Shadi Khalil
	12.45pm-1.30pm	LUNCH BREAK	45 mins	
	1.30pm-2.30pm	Final Assessment quiz and talks	60 mins	Mr Shadi Khalil Ms Mayyas Jaweesh
	2.30pm-3.15pm	Concluding remarks & Certificates	45 mins	Mr Shadi Khalil

Assessment Structure:

Media Preparation (10%) [written calculation test]

Andrology and Seminology (10%) [experimental results]

Sperm preparation and IVF (10%) [practical skills]

Science communication leaflet (10%) [written work]

Oocyte retrieval, IVM, microscopy and gamete handling (10%) [practical skills]

Time lapse and embryo grading (10%) [experimental results]

Cryopreservation (10%) [practical skills]

ICSI (10%) [practical skills]

Final Quiz (10%) [multiple choice quiz]

Lab Book (10%) [written work]