

**TIMETABLE WITH LEARNING OUTCOMES MAPPING**

<b>Day 1 Course type</b>	<b>Time Monday 23 January</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration (hrs)</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>A-B</b>	8.00-9.30	Opening, introduction, information about the course	József Kaszaki Andrea Szabó	2	Seminar online	-	online
<b>A-B</b>	9.45-11.15	Principles and requirements for reduction, refinement and replacement (3Rs)	József Kaszaki	2	Lecture online	Core Module 2 - Ethics, Animal Welfare and the Three Rs	online
<b>A-B</b>	11.30-13.00	Biology of laboratory animals I. Species-specific biology. Rodent anatomy, physiology, behaviour.	Attila Rutai	2	Lecture online	Core Module 3.1 - Basic and Appropriate Biology	online
<b>A-B</b>	14.00-15.30	Biology of laboratory animals II. Species-specific biology of large laboratory animals. Anatomy, physiology, behaviour	Gabriella Varga	2	Lecture online	Core Module 3.1 - Basic and Appropriate Biology	online
<b>Day 2</b>	<b>Tuesday 24 January</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>A-B</b>	8.00-9.30	Ethical aspects of animal use, arguments for and against the use of animals for scientific purposes	Mihály Boros	2	Lecture online	Core Module 2 - Ethics, Animal Welfare and the Three Rs	online
<b>A-B</b>	9.45-11.15	European and national legislation of animal experiments	József Kaszaki	2	Lecture online	Core Module 1 - National Legislation	online
<b>A-optional B</b>	11.30-13.00	Introduction to the science of laboratory animals, use of animals for different areas of research. The procedure of modelling.	Mihály Boros	2	Lecture online	Function Specific Module 10 - Design of procedures and project (level 1)	online

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<b>A-B</b>	14.00-15.30	Animal care, husbandry and management: appropriate, safe and humane handling, sexing and restraint	Gabriella Varga	2	Lecture online	Core Module 4 - Animal Care, Health and Management	online
<b>A-B</b>	15.45-16.30	Species specific handling, sexing and restraint of laboratory animals	Gabriella Varga, Marietta Poles; József Kaszaki	1	Video demonstration online	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	online
<b>Day 3</b>	<b>Wednesday 25 January</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>B</b>	8.00-9.30	Project evaluation and retrospective assessment – The importance of the harm/benefit analysis	Mihály Boros	2	Lecture online	Function Specific Module 9 - Ethics, Animal Welfare and the Three Rs (level 2)	online
<b>A-B</b>	9.45-11.15	Care and housing of laboratory animals. The grading of hygiene of animals and animal houses, environmental enrichment.	Dániel Érces	2	Lecture online	Core Module 4 - Animal Care, Health and Management	online
<b>A-B</b>	11.30-12.15	Species-specific recognition of pain, suffering and distress; monitoring of animal wellbeing	Attila Rutai	1	Lecture online	Core Module 5 - Recognition of Pain, Suffering and Distress	online
<b>A-B</b>	12.15-13.00	Species-specific recognition of pain, suffering and distress; Scoring system to assess animal wellbeing	Attila Rutai	1	Practice online	Core Module 5 - Recognition of Pain, Suffering and Distress	online
<b>A-B</b>	14.00-15.30	Anaesthesia and analgesia of laboratory animals. General rules of anaesthesia.	Dániel Érces	2	Lecture online	Task Specific Module 20 - Anaesthesia for Minor Procedures	online
<b>B</b>	15.40-16.30	Importance of good animal welfare including its effect on scientific outcomes;	József Kaszaki	1	Lecture online	Function Specific Module 9 - Ethics, Animal Welfare and the Three Rs (level 2)	online

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<b>Day 4</b>	<b>Thursday 26 January</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>A-B</b>	8.00-9.30	Management and maintenance of the biological safety of animal experiments	Szabolcs Tallósy	2	Lecture online	Core Module 4 - Animal Care, Health and Management	online
<b>A-B</b>	9.40-11.10	Minimally invasive procedures without anaesthesia	Attila Rutai	2	Seminar online	Function Specific Module 7 - Minimally Invasive Procedures Without Anaesthesia - theory	online
<b>A-B</b>	11.15-12.00	Post-experimental management: humane endpoints, methods of euthanasia	Dániel Érces	1	Lecture online	Core Module 6.1 - Humane Methods of Killing	online
<b>A-B</b>	12.10-13.00	Calculation of the dose of anaesthetic drugs for different species	László Juhász	1	Practice online	Task Specific Module 20 - Anaesthesia for Minor Procedures	online
<b>B</b>	14.00-15.30	Requirements of assured quality standards - Good Laboratory Practice	Csaba Varga	2	Lecture online	Function Specific Module 11 - Design of procedures and project (level 2)	online
<b>B</b>	15.40-17.10	Principle of design of projects - experimental unit, randomisation, protocols of animal experiments	József Kaszaki	2	Lecture online	Function Specific Module 10 - Design of procedures and project (level 1)	online
<b>Day 5</b>	<b>Friday 27 January</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>B</b>	8.00-9.30	The concept of gnotobiology. Important zoonotic diseases of laboratory animals.	Szabolcs Tallósy	2	Lecture online	Core Module 4 - Animal Care, Health and Management	online
<b>B</b>	9.45-10.30	Basics of statistics. Introduction of sample size estimation (theory)	Ferenc Rárósi	1	Lecture online	Function Specific Module 10 - Design of procedures and project (level 1)	online

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<b>B</b>	10.45-12.15	Advanced anaesthesia for surgical or prolonged procedures. Applied drugs, doses and side effects.	Dániel Érces	2	Lecture online	Task Specific Module 21 - Advanced anaesthesia for surgical procedures	online
<b>A-B</b>	13.15-14.00	Outbred, inbred and transgenic animals, genetic characterization, standardization, genetic quality control.	Gábor Szabó	1	Lecture online	Function Specific Module 10 - Design of procedures and project (level 1)	online
<b>B</b>	14.00-14.45	Authorisation of projects involving genetically modified animals	Gábor Szabó	1	Lecture online	Function Specific Module 10 - Design of procedures and project (level 1)	online
<b>B</b>	15.00-16.30	Licensing of animal experiments in practice - implementation of 3 Rs	József Kaszaki	2	Seminar online + Home study	Function Specific Module 9 - Ethics, Animal Welfare and the Three Rs (level 2)	online
<b>Day 6</b>	<b>Monday 30 January</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>A-B</b>	8.00-9.30	Species specific handling, sexing and restraint of laboratory animals	Gabriella Varga; László Juhász Dániel Érces; Attila Rutai;	2	Practice (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.
<b>A-B</b>	9.45-10.30	Care and housing of laboratory animals in practice: nutrition, cleaning and bedding. Different methods for marking individual.	Dániel Érces; Gabriella Varga;	1	Practice (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.
<b>A-B</b>	10.30-12.00	Minimally invasive procedures without anaesthesia on phantoms: subcutaneous, intraperitoneal, intravenous, intramuscular injections, intravenous	Attila Rutai, Szabolcs Tallósy, László Juhász, Gabriella Varga	2	Practice (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.

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		access with Braun catheters for blood sampling, infusions and gavage					
<b>A-B</b>	13.00-14.30	Anaesthesia of rodents in practice. Inhalation anaesthesia; Injections and blood sampling techniques under anaesthesia	Gabriella Varga Dániel Érces; Krisztina Kupai, Anikó Pósa	2	Practice (contact)	Task Specific Module 20 - Anaesthesia for Minor Procedures	Inst of Surgical Research Pulz st.1.
<b>A-B</b>	14.30-15.15	Species-specific experimental practices on mice.	Gabriella Varga László Juhász, Nikolett Bagi	1	Practice (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.
<b>A-B</b>	15.30-16.15	Humane and licensed methods of rodent euthanasia in practice	Dániel Érces Gabriella Varga Nikolett Bagi	1	Practice (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.
<b>A-B</b>	16.20-17.05	Advanced knowledge on mice.	László Juhász	1	Seminar (contact)	Function Specific Module 6.2 - Humane methods of killing (skills)	Inst of Surgical Research Pulz st.1.
<b>Day 7</b>	<b>Tuesday 31 January</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>A-B</b>	8.00-9.30	Principles of surgical procedures, the rules of asepsis. Basic surgical procedures. Wound management.	Szabolcs Tallósy	2	Lecture (contact)	Task Specific Module 22 - Principles of Surgery	Inst of Surgical Research Pulz st.1.
<b>A-B</b>	9.45-12.00	Practice in operating theatre: aseptic techniques, working under sterile circumstances, basic surgical procedures and suturing on dummies and phantoms	Szabolcs Tallósy, László Juhász, Attila Rutai	3	Practice (contact)	Task Specific Module 22 - Principles of Surgery	Inst of Surgical Research Pulz st.1.
<b>A-B</b>	13.00-13.45	Examination of animal behaviour	Zsuzsanna Bohár	1	Seminar (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.
<b>A-B</b>	13.50-15.20	Methods of investigating laboratory animal behaviour in practice	Zsuzsanna Bohár; Ágnes Szabó	2	Practice (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.

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<b>B</b>	15.30-17.00	Design of procedures. Experimental techniques in practice. Monitoring of vital signs	József Kaszaki	2	Lecture (contact)	Function Specific Module 11 - Design of procedures and project (level 2)	Inst of Surgical Research Pulz st.1.
<b>Day 8</b>	<b>Wednesday 1 February</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>B</b>	8.00-10.15	Basics of statistics. Introduction of sample size estimation (skill)	Ferenc Rárósi	3	Computer skills	Function Specific Module 10 - Design of procedures and project (level 1)	Dept. of Medical Physics and Informatics
<b>A-optional B</b>	10.30-12.00	Advanced knowledge on rats. Species-specific experimental practices on rats	Gabriella Varga	2	Practice (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.
<b>A-optional B</b>	13.00-14.30	Advanced knowledge on pigs. Species-specific experimental practices on minipigs	Dániel Érces, Attila Rutai	2	Practice (contact)	Function Specific Module 3.2 - Basic and Appropriate Biology - Skills	Inst of Surgical Research Pulz st.1.
<b>B</b>	14.30-14.45	Transzport to ELI ALPS Laser Research Institute					
<b>A-optional B</b>	15.00-15.45	Significance of zebrafish in animal research - Biology and experimental practice of zebrafish	Emilia Rita Szabó, Réka Molnár	2	Seminar – Practice (contact)	Core Module 3.1 - Basic and Appropriate Biology	ELI ALPS Laser Research Institute
<b>Day 9</b>	<b>Thursday 2 February</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
<b>A-optional B</b>	8.00-11.15	Basic surgical procedures on anaesthetised rodents: preparation of trachea; opening of the abdominal cavity; transcatheter perfusion	Gabriella Varga, Attila Rutai,	4	Practice	Task Specific Module 22 - Principles of Surgery	Inst of Surgical Research Pulz st.1.
<b>A-optional B</b>	11.20-12.05	In vivo monitoring of vital signs on rodents	Dániel Érces, Attila Rutai	1	Demonstration	Function Specific Module 11 - Design of procedures and project (level 2)	Inst of Surgical Research Pulz st.1.

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<b>B</b>	13.00-14.30	Design of procedures - alternatives to animal use.	Szabolcs Tallósy	1	Lecture	Function Specific Module 11 - Design of procedures and project (level 2)	Inst of Surgical Research Pulz st.1.
<b>B</b>	14.40-15.25	Dissemination of the study results. Key issues of the publication – the ARRIVE guidelines	László Juhász	1	Seminar	Function Specific Module 11 - Design of procedures and project (level 2)	Inst of Surgical Research Pulz st.1.
<b>B</b>	<b>Deadline for submission of Animal research request</b>						
<b>Day 9</b>	<b>Friday 3 February</b>	<b>Title</b>	<b>Teacher(s)</b>	<b>Duration</b>	<b>Teaching tools</b>	<b>EU module</b>	<b>Place</b>
	8.30-9.30	<b>Theoretical exam</b>	Andrea Szabó	1 hr			Inst of Surgical Research Pulz st.1.
	9.30-11.30	<b>Practical exam</b>	Andrea Szabó, József Kaszaki Gabriella Varga, Dániel Érces,	2 hrs			Inst of Surgical Research Pulz st.1.
	12.00-12.15	Closing remarks	Mihály Boros				