

## Free Online Courses in English at UFV

### Term: 2024-2

#### When will classes take place?

- August 5 - December 6, 2024

#### Who is eligible?

- **Academic mobility**: undergraduate, Master's, or Ph.D. students currently enrolled in any Higher Education Institution - **Brazilian or foreign universities. (if you are already selected for an undergraduate/master/doctorate course, but classes have not started yet, please register as a degree holder.)**
- **Degree holders**: individuals holding a bachelor's degree granted by any Higher Education Institution. This category must be the one chosen for candidates who are not currently enrolled in any Higher Education Institution.

If you have any doubts about which category to apply for, write to [dri@ufv.br](mailto:dri@ufv.br).

- For both categories the courses are free of charge.

#### Steps for the application process:

1. Between **06 to 16/06/2024** – fill out the application form and upload the required documentation:
  - a. For **academic mobility**: <https://forms.gle/j7n5RC8TrSEnKj9a6>
  - b. For **degree holders**: <https://forms.gle/kLCNqjAetSvdsgwJ8>
2. The coordinator of each course at UFV will evaluate your application, based on your curriculum vitae and transcript of records.
3. Those who have their registration approved, will receive an email message with the access information to the UFV systems to participate in the courses.
4. Classes will start on **August 05**, 2024 (some courses may start later).
5. **Required documents** for all candidates (to be attached to the registration form **in this sequence**):

1. Copy of National Identity Card (passport preferred for foreign applicants);
2. Copy of birth or marriage certificate (if you do not have this document, fill the [Declaration of personal information](#) document and stamp it at the **Notary Office**) - the registration at UFV, if you are selected, will use exactly the names indicated in your official certificate/declaration;
3. [Nomination letter](#) - **mandatory** for Academic Mobility candidates;
4. Copy of the Undergraduate/Bachelor [Certificate](#) (if you have it);
5. Copy of the Undergraduate/Bachelor [Academic Transcript](#) (if you have it);
6. Copy of the Master's [Certificate](#) (if you have a Master's degree);
7. Copy of the Master's [Academic Transcript](#) (if you have a Master's degree);
8. Copy of the Doctoral [Certificate](#) (if you have a Doctoral degree);
9. Copy of the Doctoral [Academic Transcript](#) (if you have a Doctoral degree);
10. Copy of CPF (for Brazilians only or if you already have it);
11. Copy of Voter Registration Card (for Brazilians only);
12. Copy of Military Document (for Brazilian men only);
13. Face photo - recent photo, 3x4 format, with light background.

**IMPORTANT :**

- **Good internet connection** is mandatory to follow the activities!
- For academic mobility, one of the required documents is an [official nomination](#) from the home institution. **“Self-nominated” candidates are not accepted for academic mobility.**
- **The program does not provide a degree** - students who conclude courses will receive only an official transcript of records from UFV.

**TAKE CARE TO SELECT ONLY COURSES RELATED TO YOUR  
AREA OF EXPERTISE.**

## Remote Courses:

<https://dri.ufv.br/en/ufv-courses-in-english-2024-2/>

CODE	NAME	LECTURERS
LET 604	Portuguese for Foreigners	Idalena Chaves
CIV 643	Aquatic ecotoxicology	Ann Munteer
BAN 604	Systematic review knowledge and updates	Reggiani Vilela Gonçalves
BQI 602	Biosafety	Claudio Mafra
ENG 688	Anaerobic Digestion of Wastes <b>NEW COURSE</b>	André Pereira Rosa
FIP 602	Plant Disease Epidemiology	Emerson M. Del Ponte
FIT 664	Homeopathy in Agriculture	Vicente Wagner Dias Casali
FIT 666	Epigenetics and Plants	Vicente Wagner Dias Casali
FIT 677	Breeding of Medicinal and Aromatic Plants	Vicente Wagner Dias Casali
SOL 655	Environmental Geochemistry	Isabela Cristina Filardi Vasques
SOL 625	Soil classification systems	José João Lelis Leal de Souza
TAL 706	Food Carbohydrates and Bioactive Compounds	Frederico Barros
VET 638	Stem cells in tissue regeneration	Emily Correna Carlo Reis
VET 751	Molecular biology and epidemiology applied to food production chain and veterinary sciences	Ricardo Seiti Yamatogi
<del>VET 791</del>	<del>Surgical diseases of the digestive system of ruminants</del> <b>CANCELED</b>	<del>José Ricardo Barboza Silva</del>

## Remote courses Timetable: UTC -03:00

REMOTE COURSES 2024-2					
	Monday	Tuesday	Wednesday	Thursday	Friday
8:00h		SOL 655			BQI 602
9:00h		SOL 655			BQI 602
10:00h			SOL 655		
			VET 638	TAL 706	
			<del>VET 791</del>	<del>VET 791</del>	
11:00h			SOL 655		
			VET 638	TAL 706	
			<del>VET 791</del>	<del>VET 791</del>	
12:00h			SOL 655		
13:00h					
14:00h		ENG 688	BAN 604		
15:00h		ENG 688 (until 16:20)	BAN 604		
16:00h			BAN 604		
17:00h			BAN 604		

OBS:

Courses that are not included in the timetable are because they will be defined later by the Professor after discussion with registered students.

All classes will take place from **August 5 to December 6, 2024.**

## In-person mobility :

Regarding registration in this modality, follow the guidelines for In-person mobility on the page:

<https://dri.ufv.br/en/information-for-foreign-students-3/>

CODE	NAME	LECTURERS
BQI 760	<del>Bioinformatics Applied to Omics</del> It will be taught in Portuguese	<del>Tiago Antonio de Oliveira Mendes</del>
CIV 665	Eco-efficient construction and building materials	José Maria Franco de Carvalho
ENT 669	Insecticide (Eco)Toxicology	Raul Narciso Carvalho Guedes
ENT 671	Biological Control of Arthropods	Angelo Pallini, Madelaine Venzon
ENT 760	Insect Behaviour	Simon Luke Elliot
FIT 680	Floriculture	José Antônio Saraiva Grossi
INF 620	Introduction to Artificial Intelligence and Machine Learning	Ricardo dos Santos Ferreira
INF 630	Design and Analysis of Algorithms	André Gustavo dos Santos
INF 723	Data Visualization	Sabrina de Azevedo Silveira.
LET 604	Portuguese for Foreigners	Idalena Chaves
QUI 633	Physical Methods for Identification of Organic Compounds	Elson Santiago de Alvarenga
SOL 625	Soil classification systems	José João Lelis Leal de Souza
VET 750	Foodborne Pathogens and Diseases	Luís Augusto Nero
zoo 729	Physiology of animal growth and meat quality	Mário Luiz Chizzotti
ZOO 765	Molecular Genetics applied to Animal Breeding	Simone Elisa Facioni Guimarães

## In-person mobility Timetable: UTC -03:00

<b>IN-PERSON COURSES 2024-2</b>					
	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>8:00h</b>		QUI 633	QUI 633		
			CIV 665		
<b>9:00h</b>	ENT 669	ENT 669	ENT 669	ENT 669	
	ZOO 765	QUI 633	QUI 633	CIV 643	
			CIV 665		
<b>10:00h</b>	ZOO 765		CIV 665	CIV 643	
<b>11:00h</b>	ZOO 765		CIV 665	CIV 643	
<b>12:00h</b>					
<b>13:00h</b>					
<b>14:00h</b>		INF 630	ZOO 765	ZOO 729/ SOL 625	FIT 680
<b>15:00h</b>		INF 630	ZOO 765	ZOO 729/ SOL 625	FIT 680
<b>16:00h</b>	INF 630			ZOO 729/ SOL 625	FIT 680
<b>17:00h</b>	INF 630			ZOO 729/ SOL 625	FIT 680

OBS:

Courses that are not included in the timetable are because they will be defined later by the Professor after discussion with registered students.

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**TOPICS**

CODE / NAME	TOPICS
<p><b>BQI 602</b> <b>Biosafety</b></p>	<ul style="list-style-type: none"> <li>• Comparative analysis of data generated by omics techniques and systems biology.</li> <li>• Programming in R.</li> <li>• Large-scale sequence analysis.</li> <li>• Unsupervised clustering techniques applied to omics.</li> <li>• Comparative analysis of data generated by omics techniques and systems biology.</li> <li>• Supervised classification techniques applied to omics.</li> <li>• Molecular biological networks.</li> <li>• Systems Biology.</li> <li>• Metagenomic analysis.</li> </ul>
<p><b>FIP 602</b> <b>Plant Disease Epidemiology</b></p>	<ul style="list-style-type: none"> <li>• History and concepts in Botanical Epidemiology</li> <li>• Plant disease assessment and quantification</li> <li>• Temporal dynamics and analysis of epidemics</li> <li>• Pathogen dispersal, disease gradients and patterns</li> <li>• Yield loss assessment</li> <li>• Risk assessment and disease forecasting</li> </ul>
<p><b>FIT 664</b> <b>Homeopathy in Agriculture</b></p>	<ul style="list-style-type: none"> <li>• Historic.</li> <li>• Fundamentals and Applications.</li> <li>• Homeopathic Pharmacopoeia.</li> <li>• Agroecosystems and Homeopathy.</li> <li>• Technological Clinic.</li> <li>• Repertorization.</li> <li>• Crop Management.</li> <li>• Isopathic Solutions.</li> <li>• Experimental Results.</li> </ul>
<p><b>FIT 666</b> <b>Epigenetics and plants</b></p>	<ul style="list-style-type: none"> <li>• History and Fundamentals.</li> <li>• DNA methylation.</li> <li>• Epigenetic Determinations.</li> <li>• Histone Variants.</li> <li>• Epigenetic Systems of Inheritance.</li> <li>• Epigenetic Markers.</li> <li>• Variability and Epigenetics.</li> <li>• Epigenetic Regulation in Plants.</li> </ul>
<p><b>FIT 677</b> <b>Breeding of medicinal and aromatical plants</b></p>	<ul style="list-style-type: none"> <li>• Priorities in Breeding Programs.</li> <li>• Theoretical References.</li> <li>• Pharmaco- Active Natural Products.</li> <li>• Genetic Resources.</li> <li>• Breeding Methods.</li> <li>• Inheritance Studies.</li> <li>• Experimental Techniques.</li> <li>• Experiences in Breeding Programs.</li> </ul>

<p><b>TAL 706</b>  <b>Food Carbohydrates and Bioactive Compounds</b></p>	<ul style="list-style-type: none"> <li>• Monosaccharides.</li> <li>• Carbohydrate reactions.</li> <li>• Starch.</li> <li>• Carbohydrate nutrition and dietary fiber.</li> <li>• Bioactive compounds.</li> <li>• The protective effect of foods containing bioactive compounds on chronic noncommunicable diseases.</li> </ul>
<p><b>LET 604</b>  <b>Portuguese for Foreigners</b></p>	<ul style="list-style-type: none"> <li>• Listening comprehension and analysis of oral texts, in Portuguese.</li> <li>• Production of oral texts.</li> <li>• Analysis of academic written texts.</li> <li>• Reading and interpretation of written texts. <ul style="list-style-type: none"> <li>• Writing texts related to several academic genres (abstracts, conference presentations, bibliographical essays, journal articles, conference proceedings, etc.)</li> <li>• Vocabulary and grammar.</li> <li>• Preparation for the Portuguese language proficiency exam for foreigners (Celpe-bras).</li> </ul> </li> </ul>
<p><b>SOL 655</b>  <b>Environmental Geochemistry</b></p>	<ul style="list-style-type: none"> <li>• Atomic nucleus and chemical elements origin.</li> <li>• Geochemical abundance of chemical elements.</li> <li>• Thermodynamics principles applied to natural systems.</li> <li>• Litho geochemistry.</li> <li>• Surface geochemistry.</li> <li>• Chemical equilibria and interaction of the main heavy metals in soil.</li> <li>• Main global biogeochemical cycles.</li> <li>• Eutrophication and water and soil contamination.</li> <li>• Heavy metals as pollutants and nutrients.</li> </ul>
<p><b>VET 751</b>  <b>Molecular biology and epidemiology applied to food production chain and veterinary sciences</b></p>	<ul style="list-style-type: none"> <li>• Food safety and food security. <ul style="list-style-type: none"> <li>• Molecular techniques applied to the detection and quantification of foodborne pathogens.</li> </ul> </li> <li>• Molecular techniques to track foodborne pathogens.</li> <li>• Data analysis of sequences.</li> <li>• Trends and perspectives to investigate foodborne pathogens.</li> </ul>
<p><b>BAN 604</b>  <b>Systematic review knowledge and updates</b></p>	<ul style="list-style-type: none"> <li>• Evidence-Based Practice.</li> <li>• Objectives of a Systematic Review.</li> <li>• Difference between Systematic Review and Meta-analysis.</li> <li>• Step by step of a systematic review.</li> <li>• PICO strategy.</li> <li>• Prisma Guide.</li> <li>• PubMed/Medline, Scopus, and Web of Science research.</li> <li>• Screening, and eligibility of the articles.</li> <li>• Extraction of data and Methodological bias analysis.</li> <li>• PROSPERO Number.</li> <li>• How to write the introduction of a systematic review?</li> <li>• How to write the Discussion of a systematic review?</li> </ul>
<p><b>BQI-760</b></p>	<ul style="list-style-type: none"> <li>• <del>Linux environment.</del></li> <li>• <del>Obtaining and structuring data generated by genome and transcriptome sequencing technologies.</del></li> </ul>



**Bioinformatics  
Applied to Omics**

- Sequence quality analysis and screening.
- Genome and transcriptomes assembly algorithms.
- Genome and transcriptome annotation algorithms.
- Analysis strategy of differentially expressed genes in transcriptomes.
- Obtaining data generated by gel free quantitative proteomics.
- Analysis of differentially expressed proteins.
- Obtaining data generated by metabolomics.
- Qualitative and quantitative analysis of metabolites in complex samples.

**CIV 643  
Aquatic ecotoxicology**

- Introduction to aquatic ecotoxicology, applications, and legislation.
- Classes of organic and inorganic aquatic pollutants.
- Dynamics of pollutants in aquatic environments via abiotic and biotic processes.
- Bioavailability, biotransformation, and bioaccumulation of aquatic pollutants.
- Biochemical, physiological, histological responses at the organism, and population and community levels.
  - Laboratory assessment of acute and chronic toxicity and quantification of responses.
  - Toxicity identification/reduction evaluations.
  - Assessment in the field – model ecosystems, bioindicators, and biomarkers.
  - Ecological risk assessment.

**ENT 669  
Insecticide  
(Eco)Toxicology**

- General Toxicology.
- Insecticides in the Environment.
- Insecticides within the Individual.
- Population Effects.
- Community Effects.
- Measurement and Interpretations of Ecological Effects.
- Ecological Risk Assessment.

**ENT 671  
Biological Control of  
Arthropods**

- Concepts and terminology.
- Classical biological control.
- Augmentation biological control.
- Conservation biological control.
- Ecological basis for biological control.
- Predators (insects and mites).
- Parasitoids.
- Pathogens.
- Safety of biological control.
- Biological control programs.
- Legislation for the use of biological control agents in Brazil.

**ENT 760  
Insect Behaviour**

- Introduction to Insect Behaviour.
- Insects, Animals or Organisms?
- Evolution.
- Proximal and Distal Explanations.
- Hypotheses and Assumptions.
- Experimentation.

	<ul style="list-style-type: none"> <li>• Control of Behaviour;</li> <li>• Organization of behaviours.</li> <li>• Foraging and Optimization.</li> <li>• Learning; Victim-Enemy Behaviour.</li> <li>• Nutritional Ecology.</li> <li>• Sensory Organs and Nervous System.</li> <li>• Communication and signals.</li> <li>• Acoustic communication.</li> <li>• Semiochemicals.</li> <li>• Reproduction.</li> <li>• Dispersal.</li> <li>• Haemotophagy in Insects.</li> <li>• Life in Groups.</li> </ul>
<p><b>FIP 300</b> <b>Plant Pathology I</b></p>	<ul style="list-style-type: none"> <li>• Concepts, importance, and symptomatology of plant diseases.</li> <li>• Etiology.</li> <li>• Non-infectious diseases.</li> <li>• Mycology, plant pathogenic fungi, and fungal diseases.</li> <li>• Epidemiology.</li> <li>• General principles and management practices for plant disease control.</li> <li>• Fungicides.</li> </ul>
<p><b>FIT 680</b> <b>Floriculture</b></p>	<ul style="list-style-type: none"> <li>• Importance of Floriculture.</li> <li>• Flower Market.</li> <li>• Ornamental Plant Propagation.</li> <li>• Flowering Control.</li> <li>• Plant Growth Regulation.</li> <li>• Postharvest.</li> <li>• Ornamental Crop Production: Rose, Chrysanthemum, Bulbous Ornamental Plants.</li> </ul>
<p><b>INF 620</b> <b>Introduction to Artificial Intelligence and Machine Learning</b></p>	<ul style="list-style-type: none"> <li>• Programming applied to Machine Learning and Artificial Intelligence.</li> <li>• Introduction to Machine Learning.</li> <li>• Non-supervised learning.</li> <li>• Supervised learning.</li> <li>• Deep Learning and Convolution Networks.</li> <li>• Recurrent Neural Networks and Attention Mechanisms.</li> </ul>
<p><b>INF 630</b> <b>Design and Analysis of Algorithms</b></p>	<ul style="list-style-type: none"> <li>• Main algorithm design paradigms.</li> <li>• Mathematical principles for algorithm analysis.</li> <li>• Complexity analysis.</li> <li>• NP-Completeness.</li> <li>• Lower bounds.</li> <li>• Approximation algorithms.</li> </ul>
<p><b>INF 723</b> <b>Data Visualization</b></p>	<ul style="list-style-type: none"> <li>• Sources and data collection for visualization.</li> <li>• Basic statistical/mathematical analysis and data mining.</li> <li>• Data representations and visual metaphors.</li> <li>• Visual principles.</li> <li>• Elements of interaction.</li> </ul>

<p><b>QUI 633</b> <b>Physical Methods for Identification of Organic Compounds</b></p>	<ul style="list-style-type: none"> <li>• Spectroscopy in the ultraviolet and visible region (UV-VIS).</li> <li>• Spectroscopy in the infrared (IR) region.</li> <li>• Mass spectroscopy (MS).</li> <li>• Nuclear Magnetic Resonance (NMR).</li> <li>• Elucidation of the structure of organic compounds by analysis of UV-VIS, IR, EM and NMR.</li> </ul>
<p><b>VET 638</b> <b>Stem Cells in Tissue Regeneration</b></p>	<ul style="list-style-type: none"> <li>• Stem cell definition and characterization.</li> <li>• Stem cell biology.</li> <li>• Effects of stem cells.</li> <li>• Influence of the microenvironment part 1: source.</li> <li>• Stem cell harvest, culture, and expansion.</li> <li>• Influence of the microenvironment part 2: host.</li> <li>• Matrix and therapeutics.</li> <li>• Specific tissues.</li> </ul>
<p><b>VET 750</b> <b>Foodborne Pathogens and Diseases</b></p>	<ul style="list-style-type: none"> <li>• Epidemiology of foodborne diseases.</li> <li>• Characterization of foodborne pathogens and diseases.</li> <li>• Detection and enumeration of foodborne pathogens.</li> <li>• Impacts of foodborne diseases.</li> <li>• Prevention of foodborne diseases.</li> <li>• Trends in food safety.</li> </ul>
<p><b>VET 794</b> <b>Surgical diseases of the digestive system of ruminants</b></p>	<ul style="list-style-type: none"> <li>• <del>Esophageal obstruction.</del></li> <li>• <del>Surgical and diagnostic approaches to the bovine abdomen.</del></li> <li>• <del>Diseases of the forestomach compartments, abomasum, and intestines.</del></li> </ul>
<p><b>ZOO 729</b> <b>Physiology of animal growth and meat quality</b></p>	<ul style="list-style-type: none"> <li>• Growth and development of muscle, fat, and bone tissue.</li> <li>• Myogenesis, Adipogenesis, Fibrogenesis, and Hypertrophy.</li> <li>• Zootechnical factors affecting animal growth.</li> <li>• Hormonal regulation of animal growth.</li> <li>• Transformation of muscle into meat.</li> <li>• Proteolysis and post-mortem metabolism.</li> <li>• Meat quality: pH, texture, color, lipid profile, and flavor.</li> </ul>
<p><b>ZOO 765</b> <b>Molecular Genetics applied to Animal Breeding</b></p>	<ul style="list-style-type: none"> <li>• Introduction to Molecular Biology “OMICS”.</li> <li>• Structure and function of nucleic acids.</li> <li>• DNA replication, transcription and translation.</li> <li>• The “omics” in animal production.</li> <li>• Use of biomarkers in animal production.</li> <li>• Genomic markers in animal production.</li> <li>• Phenotypic analysis of gene expression in animal production.</li> <li>• Non-Mendelian pattern of inheritance in animal production.</li> <li>• Genotype x environment interaction.</li> <li>• Genetically modified animals.</li> </ul>