Online Graduate courses in English at UFV

When?

15 March 2021 – 2 July 2021

Courses

AREA	CODE	NAME	LECTURERS	
Agricultural Engineering	ENG 691	Algorithms Applied to Agricultural Process	Evandro de Castro Melo	evandro@ufv.br
	ENG 673	Mycotoxins in agricultural products	Lêda Rita D´Antonino Faroni	lfaroni@ufv.br
	ENG 792	Special Topics (Geoprocessing Applied to Agriculture)	Domingos Sárvio Magalhães Valente	valente@ufv.br
	ENG 792	Special Topics (Post-Harvest of Agricultural Products)	Ernandes Rodrigues de Alencar	ernandes.alencar@ufv.br
	ENG 796	Special Problems (Digital Agriculture)	Daniel Marçal de Queiroz	queiroz@ufv.br
Animal Science and Veterinary Medicine	ZOO 796	Multivariate analysis for construction of environmental indicators with respective predictive models	Fabyano Fonseca e Silva	fabyanofonseca@ufv.br
	VET 791	Viral infections of swine	Abelardo Silva Junior	abelardo.junior@ufv.br
			Carlos Eduardo Real Pereira	carlos.pereira@ufv.br
Architecture	ARQ 661	Scientific Methodology Applied to Architecture and Urbanism	Luciana Bosco e Silva	luciana.bosco@ufv.br
Computer Science	INF 610	Data Structures and Algorithms	Vladimir Di Iorio	vladimir@ufv.br
			Michel Melo da Silva	michel.m.silva@ufv.br
	INF 723	Data Visualization	Sabrina Azevedo	sabrina@ufv.br
Entomology	ENT 774	Symbioses: From Mutualism to Parasitism	Simon Elliot	selliot@ufv.br
	ENT 682*	Ecophysiological Interactions Among Aquatic Insects, Fishes and Pollutants	Eugenio Oliveira	eugenio@ufv.br
	ENT 662	Physiology of insects	Eugenio Oliveira	eugenio@ufv.br
Environment	TGA 610	Pollution Control and Waste Valorization	Sibele Augusta Ferreira Leite	sibeleaugusta@ufv.br
			Brenno Santos Leite	brennoleite@ufv.br
	CBF 641*	Conservation and Management of Natural Ecosystems	Leonardo Esteves Lopes	leonardolopes@ufv.br
Food Science & Technology	TAL 706	Food Carbohydrates and Bioactive Compounds	Frederico Barros	fredbarros@ufv.br
Languages	LET 604	Portuguese for Foreigners	Idalena Chaves	idalena@ufv.br
	LET 792	Portuguese for Foreigners – Level 2	Idalena Chaves	idalena@ufv.br
Microbiology	MBI 610	Microbial Physiology	Antônio Galvão do Nascimento	agalvao@ufv.br
			Hilário Cuquetto Mantovani	hcm6@ufv.br
			Wendel Batista da Silveira	wendel.silveira@ufv.br
Nutrition	NUT 791*	Nutrition and microbiome: designing the gut by what we eat	Hércia Stampini Duarte Martino	hercia@ufv.br
	NUT 791*	Lipoic, lipoteichoic and Teichoic acid: biosynthesis, mechanisms involved and therapeutic purposes	Maria do Carmo Gouveia Peluzio	mpeluzio@ufv.br
	NUT 642	Nutritional Epidemiology	Juliana Farias de Novaes	jnovaes@ufv.br
Plant Pathology	FIP 606	Analysis and visualization of research data	Emerson Del Ponte	delponte@ufv.br
	FIP 607	Plant Pathogens	Gleiber Quintão Furtado	gfurtado@ufv.br
			Jorge Luis Badel Pacheco	jorge.badel@ufv.br
			Leandro Grassi de Freitas	leandro@ufv.br
			Murilo Zerbini	zerbini@ufv.br
Plant Science	FIT 632	Plant Cell and Tissue Culture	Sergio Yoshimitsu Motoike	motoike@ufv.br
	FIT 678	Quantitative and molecular genetics in plant breeding	Guilherme da Silva Pereira	g.pereira@ufv.br
Soil Science	SOL 793	Chemistry and Fertility of Tropical Soils	Samuel Valadares	samuel.valadares@ufv.br
			Edson Mattiello	mattiello@ufv.br
			Maurício Fontes	mpfontes@ufv.br

* = courses with timetable to be defined

Timetable: UTC -03:00

Except for the ENG courses, the timetable below presents the times reserved for **synchronous** activities, every week.

The ENG courses will use synchronous activities only eventually, on dates indicated to the students in advance.

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00h	FIT 632	NUT 642	ENG 792	ENG 796	NUT 642
		ENG 691	ENG 673	FIP 607	ENG 691
		FIP 607	LET 792		LET 604
					ENT 774
					ENG 792
9:00h	FIT 632	NUT 642	TGA 610	ENG 796	NUT 642
		ENG 691	ENG 792	ZOO 796	ENG 691
		FIP 607	ENG 673	FIP 607	LET 604
			LET 792		ENT 774
					ENG 792
10:00h	FIT 678	NUT 642	TGA 610	INF 610	NUT 642
		ENG 673	ENG 792	ENG 796	ENG 792
		MBI 610	ENG 673	TAL 706	MBI 610
		SOL 793		ZOO 796	
				VET 971	
11:00h	FIT 678	NUT 642	TGA 610	INF 610	NUT 642
		ENG 673	ENG 673	TAL 706	MBI 610
		MBI 610		ZOO 796	
		SOL 793		VET 971	
12:00h				FIP 606	
13:00h				FIP 606	
14:00h	ARQ 661	ENT 662	ENT 774	SOL 793	ENT 662
		INF 723			
15:00h	ARQ 661	ENT 662	ENT 774	SOL 793	ENT 662
		INF 723			
16:00h	ARQ 661				INF 723
17:00h	ARQ 661				INF 723

TOPICS

SOL 793 – Chemistry and Fertility of Tropical Soils (75h)

1. Introduction.
2. Basic concepts of soil chemistry and mineralogy.
3. Plant nutrients and beneficial elements.
4. Nutrient dynamics in the soil-plant-atmosphere continuum.
5. Soil acidity, liming and dynamics of Ca and Mg in the soil-plant system.
6. Nitrogen.
7. Phosphorus.
8. Potassium.
9. Sulfur.
10. Micronutrients.
11. Basic concepts for soil fertility evaluation and control.
12. Fertilizers.
13. Nutrient management in agriculture and forestry.

FIP 606 – Analysis and visualization of research data (60h)

1. Fundamentals of surveys and experiments
2. Data types, organization and cleaning
3. Data exploration and summary statistics
4. Inferential statistics
5. Tabular and graphical outputs
6. Summary report in R Markdown
7. Bonus: R for data analysis

FIP 607 – Plant Pathogens (60h)

1. Fungi
1.1. History and importance
1.2. Morphology, reproduction, ecology and dissemination
1.3. Characteristics and classification
1.4. Basis of taxonomy and identification
1.5. Symptoms of plant fungal diseases
1.6. Pathogenicity tests
1.7. Life cycle
1.8. Control of fungal diseases of plants
2. Bacteria
2.1. History and importance
2.2. Morphology, structure and physiology
2.3. Multiplication, survival and dissemination
2.4. Plant penetration and tissue colonization
2.5. Variability and taxonomy
2.6. Symptoms and disease control
2.7. Isolation from infected tissue

2.8. Pathogenicity tests
3. Nematodes
3.1. Definition and importance
3.2. Anatomy and taxonomy
3.3. Biology and ecology
3.4. Pathogenic relationships of the main genera and interactions with other microorganisms
3.5. Management of plant nematodes
4. Viruses
4.1. History and importance
4.2. Symptoms induced by plant viruses
4.3. Morphology and structure
4.4. Replication strategies
4.5. Cell-to-cell and long-distance movement
4.6. Sub-viral infectious agents
4.7. Genetic variability and evolution
4.8. Natural transmission
4.9. Control of plant virus diseases

VET 791 - Viral infections of swine (30h)

1. Etiology, pathogenisis and clinical signs, control and prophylaxis of viral infections of swine
2. African Swine Fever
3. Aujesky Disease
4. Influenza A
5. Parvovirosis
6. Porcine Circovirus Associated Disease
7. Porcine Reproductive and Respiratory Syndrome
8. Porcine Epidemic Diarrhoea Virus/ Transmissible Gastroenteritis Virus
9. Infection by Senecavirus A and Rotavirus

ZOO 796 - Multivariate analysis for construction of environmental indicators with respective predictive models (45h)

1. Basic concepts of Experimental Design in Agricultural research.
2. Statistical concepts behind ANOVA.
3. Introduction to Mixed Model theory.
4. Variance components and genetic parameter estimates.
5. Statistical analysis of longitudinal and multivariate datasets.
6. Introduction to Genomic Selection.
7. Introduction to Genome-Wide Association Study

MBI 610 - Microbial Physiology (60h)

1. Microbial cell structure and function.
2. Composition, organization, and physiology of microbial cells.
3. Nutrient transport and protein secretion.
4. Growth of microbial populations.
5. Thermodynamics and energy conservation in biological systems.
6. Introduction to cellular bioenergetics.
7. Electron transport.
8. Bioenergetics in the cytosol.
9. Classification of microbial metabolism.
10. Central Metabolic Pathways.
11. Flux in Central Metabolic Pathways.
12. Fermentations.
13. Autotrophy.
14. Mineral nutrition.
15. Monomer biosynthesis.
16. Polymer biosynthesis.
17. Growth yield.
18. Regulation of metabolic pathways.
19. Multigene networks and global regulation systems.
20. Nutrient limitation responses and growth rate effects on cellular physiology.
21. Environmental adaptive responses.
22. Cellular communication and biofilms.
23. Cellular differentiation and morphogenesis.

ENT 774 - Symbioses: From Mutualism to Parasitism (45h)

1. Basic Concepts of Symbiosis
2. Evolutionary Ecology of Symbioses
3. Types of Mutualism
4. Parasitism and modes of transmission
5. Ecology of Symbioses
6. Case Studies
7. Applications of theory

ENT 682 - Ecophysiological Interactions Among Aquatic Insects, Fishes and Pollutants (60h)

1. Concepts
2. Categories and biases
3. Aquatic organisms
4. Pollutants on aquatic systems

5. Physiological interactions and unintended effects of aquatic pollutants
6. Biomolecular tools used in ecotoxicology

ENT 662 – Physiology of insects (60h)

...

TAL 706 - Food Carbohydrates and Bioactive Compounds (30h)

1. Carbohydrate reactions.
2. Starch.
3. Carbohydrate nutrition and dietary fiber.
4. Bioactive compounds.
5. The protective effect of foods containing bioactive compounds on chronic noncommunicable diseases.
6. Seminar presentations.

ENG 673 - Mycotoxins in agricultural products (75h)

1. Mycotoxins in pre-harvest: contamination of crops.
2. Mycotoxin risk assessment and management in agricultural products.
3. Deterministic methods for assessing mycotoxin exposure.
4. Food safety and regulations of agricultural products contaminated by mycotoxins.
5. Legislation and regulation of mycotoxin limits in foods.
6. Sampling for evaluation of mycotoxins in agricultural products.
7. Mycotoxin analysis techniques.
8. Hazard Analysis and Critical Control Points (HACCP) to control mycotoxins in agricultural products.
9. Influence of environmental conditions on the production of mycotoxins.
10. Control of mycotoxins in grain storage.
11. Techniques for decontamination/detoxification of mycotoxins in grains.
12. Mycotoxins and their effects on human and animal health.

ENG 796 - Special Problems (Digital Agriculture) (45h)

1. Principles of digital agriculture.
2. GNSS - Global Navigation Satellite Systems.
3. Mapping soil attributes.
4. Mapping plant attributes.
5. Yield mapping.
6. Internet of thing and connectivity.
7. Cloud computing and big data.
8. Digital irrigation.
9. Geoprocessing in the digital agriculture.
10. Machine learning.
11. Applications of digital agriculture to agriculture engineering systems.

ENG 792 - Special Topics (Geoprocessing Applied to Agriculture) (45h)

1. Basic concepts of GIS.
2. Geoprocessing tools for vector layers.
3. Spatial selections.
4. Basic concepts of geostatistics.
5. Unsupervised and supervised classification.
6. Orbital remote sensing in QGIS 3.
7. Cases in geoprocessing applied to agriculture.

ENG 792 - Special Topics (Post-Harvest of Agricultural Products) (45h)

1. Psychrometry.
2. Post-harvest losses of agricultural products.
3. Post-harvest physiology of fruits and vegetables.
4. Storage of agricultural products.
5. Quality of agricultural products.
6. Factors affecting quality of stored agricultural products.
7. Grain drying.

ENG 691 - Algorithms Applied to Agricultural Process (60h)

1. Algorithms in the development of computer programs.
2. Programming languages applied to agricultural process.
3. Application development for agricultural process.
4. Decision support systems for agricultural process.

CBF 641 - Conservation and Management of Natural Ecosystems (45h)

1. Introduction to and history of Conservation Biology.
2. Ecosystem services and its valuing.
3. Habitat disturbance, loss, and fragmentation.
4. Fire and biodiversity.
5. Overharvesting of natural resources.
6. Invasive species and its impacts upon the biological communities.
7. Global climate changes.
8. Extinctions and how to prevent them.
9. Conservation and management of ecosystems; Local people and their importance for conservation.
10. Conservation and management: from theory to practice.

TGA 610 - Pollution Control and Waste Valorization (45h)

1- Sustainability and Pollution Control.
2- Environmental Technologies Applied to Agricultural / Agroindustrial Waste.
3- Physical-chemical analysis for process monitoring and pollution control.
4- Introduction to the Concept of Waste Recovery: a) Anaerobic Biodigestion; b) Microalgae production; c) Combustion; d) Liquefaction.
5- Outline of a Proposal for the Valuation of Agricultural (s) / Agroindustrial Waste (s).

LET 604 - Portuguese for Foreigners (60h)

1. Listening comprehension and analysis of oral texts, in Portuguese.
2. Production of oral texts.
3. Analysis of academic written texts.
4. Reading and interpretation of written texts.
5. Writing texts related to several academic genres (abstracts, conference presentations, bibliographical essays, journal articles, conference proceedings, etc.)
6. Vocabulary and grammar.
7. Preparation for the Portuguese language proficiency exam for foreigners (Celpe-bras).

LET 792 - Portuguese for Foreigners – Level 2 (45h)

1. Brazilian Portuguese: oral and written expression.
2. Learning grammar and vocabulary.
3. Linguistic aspects.
4. Linguistic variation.
5. Aspects of Brazilian culture.
6. Listening comprehension.
7. Oral and written production of texts.

ARQ 661 - Scientific Methodology Applied to Architecture and Urbanism I (60h)

1. Scientific knowledge, science and technology.
2. Research methodology, method and techniques.
3. Academic production of thesis, dissertation and articles.

NUT 791 - Nutrition and microbiome: designing the gut by what we eat (30h)

1. Plant origin bioactive compounds and impact to intestinal health: interactions between dietary plant origin bioactive compounds, their potential effects on the intestinal bacterial populations, and overall intestinal functionality and morphology and gut health.
2. Digestion and transport, and Nutrients-Gene interactions in the intestinal brush border membrane and basolateral membrane.
3. How to design in vivo methods, in ovo, in order to assess dietary interventions.

NUT 791 - Lipoic, lipoteichoic and Teichoic acid: biosynthesis, mechanisms involved and therapeutic purposes (30h)

1. Introduction.
2. Chemical structure of the lipoic, lipoteichoic and Teichoic acid.
3. Absorption, biosynthesis and plasma concentrations of the of lipoic, lipoteichoic and teichoic acid characteristics.
4. Mechanisms involved and therapeutic purposes of the of lipoic, lipoteichoic and Teichoic acid.
5. Relationship of the lipoic, lipoteichoic and teichoic acid with chronic diseases.
6. Antioxidant properties of the lipoic, lipoteichoic and teichoic acid.

NUT 642 - Nutritional Epidemiology (60h)

1. Methods in nutritional epidemiology with an emphasis on evaluation food consumption.
2. Errors and biases inherent to the methods of dietary surveys in epidemiological studies.
3. Development of the Food Frequency Questionnaire.
4. Minimizing errors in the measurement of dietary intake.
5. Implications of total energy intake for epidemiological analysis.
6. Evaluation and control of underreporting of energy intake in epidemiological studies.
7. Assessment of dietary patterns.
8. Use of biochemical markers to assess food intake.
9. Critical analysis of computer programs in dietary assessment.
10. Critical analysis of the Food Guide for the Brazilian Population.
11. Other relevant indicators in nutritional epidemiology studies.

FIT 678 – Quantitative and molecular genetics in plant breeding (60h)

1. Elements of genomic analysis.
2. Principles of quantitative genetics associated with molecular markers.
3. Principles of population genetics in plant breeding.
4. Population genetics at the molecular level.
5. Analysis of segregating populations with molecular markers.
6. Association between agronomic traits and molecular markers.
7. Experimental design in loci study of inbred lines.
8. Experimental design in loci study of open-pollinated species.
9. Parental selection for breeding purposes.
10. Molecular marker-assisted breeding.
11. Fixation of directly introduced DNA segments.
12. Maintaining improved populations.

FIT 632 – Plant Cell and Tissue Culture (60h)

1. Plant cell and tissue culture: a brief history, description, technology and potential applications of organ culture, meristem culture, anther/pollen culture, callus suspension cultures and protoplast culture.
2. Plant micropropagation: regeneration through meristem and callus cultures.
3. Somatic embryogenesis: production, preservation and use of somatic embryos as propagules.

4. Storage of germplasm: cryopreservation.
5. Somatic hybridization; induction and utilization of somatic variants; plant transformation.
6. Commercialization of tissue culture technology: concept of commercialization and the need, design of typical tissue culture laboratory and its management.

INF723 - Data Visualization (60h)

1. Sources and data collection for visualization.
2. Basic statistical / mathematical analysis and data mining.
3. Data representations and visual metaphors.
4. Visual principles.
5. Elements of interaction.

INF610 - Data Structures and Algorithms (60h)

1. Basic and advanced data structures: lists, queues, stacks, trees and graphs.
2. Principles of analysis of algorithms.
3. Algorithm design paradigms.
4. NP-Completeness.