Online courses in English

When?

9 November 2020 – 19 December 2020 /---break---/ 11 January 2021 – 12 February 2021

Courses

AREA	CODE	NAME	LECTURERS
Veterinary Medicine and Animal Science	VET744	Animal Vaccinology	Abelardo Silva Jr abelardo.junior@ufv.br
	VET750	Foodborne Pathogens and Diseases	Luís Augusto Nero nero@ufv.br
	VET790	Advanced assisted reproductive technologies in cattle	Luiz Sérgio Camargo luiz.camargo@embrapa.br
	VET791	Animal Breeding and Genetics	Simone Guimarães sfacioni@ufv.br
Plant Pathology	FIP600	General Plant Pathology	Eduardo Mizubuti mizubuti@ufv.br
	FIP602	Plant Disease Epidemiology	Emerson Medeiros Del Ponte delponte@ufv.br
	FIP704	Methods in Molecular Plant Pathology	Francisco Murilo Zerbini Junior zerbini@ufv.br
Plant Physiology	CBF770	Plant Stress Physiology	Eduardo Gusmão Pereira egpereira@ufv.br
Soil Science	SOL735	Brazil and West Africa: Geosystems, Landscape, Land Use, Agricultural and Social connections	Carlos Schaefer carlos.schaefer@ufv.br
Applied Biochemistry	BQI760	Bioinformatics	Tiago Mendes tiagoaomendes@ufv.br
Entomology	ENT602	Scientific Writing	Ricardo Campos – ricardo.campos@ufv.br Simon Elliot – selliot@ufv.br Lucas Paolucci – lucas.paolucci@ufv.br
	ENT671	Biological Control of Arthropods	Angelo Pallini - pallini@ufv.br Madelaine Venzon - madelainevenzon@gmail.com
	ENT682	Ecophysiological Interactions Among Aquatic Insects, Fishes and Pollutants	Eugenio de Oliveira- eugenio@ufv.br (schedule to be defined)
Computer Science	INF610	Data Structures and Algorithms	Vladimir Di Iorio - vladimir@ufv.br Michel Melo da Silva - michelms@dcc.ufmg.br
Languages	LET604	Portuguese for foreigners	Idalena Chaves idalena@ufv.br

Timetable: UTC -03:00

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00h		VET750		VET750	LET604
9:00h	VET791	VET790	VET744	VET790	LET604
		ENT682		ENT682	
10:00h	BQI760	FIP600	BQI760	INF610	CBF770
	SOL735	SOL735	FIP602		
	VET791	ENT682	VET744	ENT682	
11:00h	BQI760	FIP600	BQI760	INF610	FIP704
	SOL735	SOL735	FIP602		CBF770
	VET791	ENT682	VET744	ENT682	
12:00h					FIP704
13:00h					
14:00h	ENT671	ENT602			ENT602
15:00h	ENT671	ENT602			ENT602
16:00h	ENT671	ENT602			ENT602

17:00h	ENT671				

TOPICS

VET744 - Animal Vaccinology (60h)

Program:
1. History about vaccines
2. Immune response against vaccines
3. Vaccines classes
4. Design of recombinant vaccines
5. Adjuvants to improve immune response
6. Animal model
7. Brazilian laws about registration of veterinary vaccines

VET791- Animal Breeding and Genetics (30h)

Program:
1. Definition of animal breeding
2. How can animal breeding help in animal production?
3. Genetic parameters in animal breeding
4. Correlation, inbreeding and crosses
5. Genomics applied to animal breeding
6. Breeding and genomics applied to the main livestock species: Cattle (beef and milk), pigs, poultry, horses.

VET790 - Advanced assisted reproductive technologies in cattle (15h)

Assisted reproductive technologies (ART), as artificial insemination and embryo transfer, have been contributed to breeding programs in order to enhance productivity in cattle. In the last 20 years new technologies have arisen, increasing the impact of ART on animal production. Some of those advanced technologies, as in vitro embryo production, have been broadly adopted in several countries whereas others, as animal cloning, have focused on specific niches. Some technologies are not yet commercially available as genome editing in embryos, but they can be a game changer in animal breeding for the next decades. This course intends to offer an overview of those advanced ART and how they have been applied to cattle production.

Program:
1. Overview of in vitro embryo production.
2. Oocyte in vitro maturation and fertilization.
3. Oocyte evaluation.
4. In vitro embryo culture.
5. Somatic cell nuclear transfer.
6. Genome editing in livestock.

VET750 - Foodborne Pathogens and Diseases (60h)

Program:

1. Epidemiology of foodborne diseases
   1.1. Ecology of foodborne pathogens
   1.2. Cases and outbreaks investigation
2. Characterization of foodborne pathogens and diseases
   2.1. Taxonomy
   2.2. Virulence and pathogenicity
   2.3. Occurrence and distribution in the food chain
   2.4. Symptoms and target populations
   2.5. Diagnosis, treatment and control
3. Detection and enumeration of foodborne pathogens
   3.1. Official protocols
   3.2. Sampling procedures and processing
   3.3. Conventional methods for enumeration and detection
   3.4. Alternative methods for enumeration and detection
4. Impacts of foodborne diseases
   4.1. Public health
   4.2. Industry
   4.3. International trade and policies
5. Prevention of foodborne diseases
   5.1. Surveillance and official reports
   5.2. Industrial procedures
   5.3. Systematic approaches to assure food safety
   5.4. Risk analysis
6. Trends in food safety
   6.1. Emerging foodborne pathogens

FIP600 - General Plant Pathology (30h)

Program:

1. Overview of concepts and topics in plant pathology.
2. History and relevance of plant pathology for food safety, food security and agribusiness.
3. Symptomatology.
4. Etiology of plant diseases.
5. Biology and ecology of plant pathogens.
6. Basic concepts of epidemiology.
7. Plant disease control.

FIP602 - Plant Disease Epidemiology (60h)

Program:

1. History and concepts in Botanical Epidemiology.
2. Plant disease assessment and quantification.
3. Temporal dynamics and analysis of epidemics.
4. Pathogen dispersal, disease gradients and patterns.
5. Yield loss assessment.
6. Risk assessment and disease forecasting.

FIP704 - Methods in Molecular Plant Pathology (60h)

Program:

1. Structure and function of macromolecules.
2. Nucleic acid replication and protein synthesis.
3. Recombinant DNA techniques.
4. Basics of bioinformatics.
5. Diagnosis of phytopathogens using molecular techniques.
6. Molecular markers.
7. Plant transformation for resistance to phytopathogens.
8. Genomics of phytopathogens.

BQI760 - Bioinformatics (60h)

Program:

1. Tools and techniques for statistical analysis, visualization, data mining and data modeling applied to genomics, transcriptomics, proteomics and metabolomics.
2. Advanced programming training on R platform. Methodologies for large-scale sequence analysis including comparative genomics, phylogenomic analysis, SNPs and selective pressure analysis by dN/dS.
3. Unsupervised clustering and visualization techniques for cluster identification and supervised classification techniques for analyzing biomarkers or other targets of interest.
4. Systems biology techniques to integrate and interpret data obtained by multiple omics. Construction and analysis, based on graph theory, of molecular biological networks such as protein-protein interaction network (interatome), metabolic network and gene regulation network using the Cityscape software.
5. Mathematical modeling of biological systems to identify patterns and integrate different omics data.

ENT602 – Scientific Writing (45h)

Program:

1. What is a scientific paper.
2. Structure of a paper.
3. Ethics in the publication of papers.
4. Importance of Reading.
5. Literature review and citation.
6. Preparation of the manuscript.
7. Critical reading.
8. Which journal to choose.
9. How to submit.
10. Peer review.
11. How to structure phrases in a paper.
12. What to avoid and what to embrace.
13. Principles of clear and effective writing.
14. Writing with strong and active verbs.
15. How to construct an effective paragraph (organized and concise).
16. Use of varied resources in writing.
17. Review of writing.
18. Title and Abstract: equilibrium and elegance.
19. Introduction: essential and dispensable parts.
20. Material and methods: the importance of precision and detail.
21. Results: simple, direct and precise writing.
22. Discussion: arguments, limitations and implications of the study.

ENT671 – Biological Control of Arthropods (60h)

Program:

1. Concepts and terminology.
2. Classical biological control.
3. Augmentation biological control.
4. Conservation biological control.
5. Ecological basis for biological control.

6. Predators (insects and mites).
7. Parasitoids.
8. Pathogens.
9. Safety of biological control.
10. Biological control programs.
11. Legislation for the use of biological control agents in Brazil.

ENT682 – Ecophysiological Interactions Among Aquatic Insects, Fishes and Pollutants (60h)

Program:
1. Concepts, categories and biases.
2. Aquatic organisms.
3. Pollutants on aquatic systems.
4. Physiological interactions and unintended effects of aquatic pollutants.
5. Biomolecular tools used in ecotoxicology.

CBF770 - Plant Stress Physiology

Program:
1. Plant stress responses
  1.1. Concepts on stress and strain
  1.2. Plasticity, acclimation and adaptation
  1.3. Temporal scale of plant stress response
2. Metabolic adjustments and antioxidant metabolism
  2.1. Signal transduction and stress response
  2.2. Oxidative stress
  2.3. Metabolic reprogramming during stress response
3. Light stress and thermic stress
  3.1. Photosynthetic responses to excess radiation
  3.2. Shadow avoidance in plants
  3.3. Responses to extreme temperatures
4. Water stress and salinity
  4.1. The control of hydric status and the strategies of drought resistance
  4.2. Osmotic and ionic effects of salinity
  4.3. Metabolic bases of osmotic stress tolerance
5. Nutritional stress and resistance to trace metals
  5.1. Nutrient use efficiency and nutritional deficiency responses
  5.2. Adaptive strategies to nutritional deficit
  5.3. Metal toxicity and phytoremediation
6. Environmental pollution stress
  6.1. Effects of organic and inorganic pollutants in plants
  6.2. Atmospheric pollutants
  6.3. Bioindicators and pollution monitoring

SOL735 - Brazil and West Africa: Geosystems, Landscape, Land Use, Agricultural and Social connections (45h)

Program:
1. The physical environment of Brazil and West Africa - the Gondwana connection (10h).
2. Geomorphology, soils and landscapes in West Africa (4h).
3. Geomorphology, soils and landscapes in Brazil (6h).
4. The Human and social dimensions of West African and Brazilian societies (10 h).
5. Agricultural traditions in both margins of the Atlantic: the globalization of Tropical Plants (10 h).
6. Present and Future of Brazil and Africa interplays (5 h).

INF610 - Data Structures and Algorithms (60h)

Program:
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.

LET604 - Portuguese for Foreigners (60h)

Program:
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).