

Brothers, Sheila C

From: Schroeder, Margaret <m.mohr@uky.edu>
Sent: Tuesday, February 03, 2015 9:07 AM
To: Brothers, Sheila C
Subject: Proposed New Dual Degree Program: PhD in Plant Pathology with Universidade Federal de Vicosa

Proposed New Dual Degree Program: PhD in Plant Pathology with Universidade Federal de Vicosa

This is a recommendation that the University Senate approve, for submission to the Board of Trustees, the establishment of a new Dual Degree Program: PhD in Plant Pathology with Universidade Federal de Vicosa, in the Department of Plant Pathology within the College of Agriculture, Food, and Environment.

Best-

Margaret

Margaret J. Mohr-Schroeder, PhD | Associate Professor of Mathematics Education | [STEM PLUS Program Co-Chair](#)
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College of Agriculture,
Food and Environment

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OFFICE OF THE
SENATE COUNCIL

Department of Plant Pathology
University of Kentucky
201F Plant Science Building
1405 Veterans Drive
Lexington, KY 40546

October 13, 2014

Dear Colleagues,

This is a proposal for a dual degree program between the University of Kentucky (UK) Department of Plant Pathology and the Departamento de Fitopatologia at the Universidade Federal de Viçosa (UFV) in Brazil. Both are ranked among the top five similar departments in their respective countries. Students in the dual degree program will earn Doctoral degrees in Plant Pathology from both institutions by simultaneously completing the requirements of both programs. The advantages to the students include the unique ability to obtain advanced practical training and to develop cultural and language fluency in both the United States and Brazil, while the advantages to our respective departments include the ability to recruit academically superior students from both countries, and facilitation of research collaborations to focus on plant disease problems of mutual interest. Our departmental strengths are complementary, with UK specializing in the molecular and cellular biology of plant-microbe interactions, and UFV focused primarily on applied pathology and sustainable approaches to plant disease management. The participating faculty at UFV are fluent in English, and received their higher educations primarily in the US and Europe so they are uniquely suited for this type of collaborative educational endeavor.

To my knowledge, this is the first dual degree proposal at UK. Given this, we anticipate that there may be many questions. We have spent the past several years in continuous discussion with our colleagues at UK and at UFV, as well as with representatives of the UK Graduate School and also the UK International Center, and we hope at this point that we have addressed all of the major issues and obstacles. We are willing to listen to any questions or concerns, and hope sincerely that you will be able to help us to address them expeditiously, so that this proposal can become a reality. Having this program in place will put UK at the forefront of a new revolution in the internationalization of higher education. Already UFV has many such agreements with European universities, but so far there have been none brought to fruition with a US university. I sincerely hope that UK can be the first. Thank you for your attention to the enclosed document.

With best regards
Lisa Vaillancourt

A handwritten signature in cursive script, appearing to read 'Lisa Vaillancourt'.

Professor of Plant Pathology
Director of Graduate Studies

DUAL DOCTORAL DEGREE IN PLANT PATHOLOGY BETWEEN THE UNIVERSITY OF KENTUCKY AND THE UNIVERSIDADE FEDERAL DE VIÇOSA

Program Goal

This is a proposal for a dual Doctoral degree program between the University of Kentucky (UK) and the Universidade Federal de Viçosa (UFV) in Brazil. Students will acquire academic credits and develop part of the research for their Doctoral dissertations at the partner university. A stay of at least 12 consecutive months at the partner university will be required for the program. Students in the program will obtain Doctoral degrees in Plant Pathology from both UK and UFV. Students in the program will develop language skills in English and Portuguese, and become familiar with norms of the discipline in both countries. Students will fulfill the academic requirements of both institutions in order to obtain degrees from both. The goal is to prepare students to work across borders, in academic, government, or industry settings. Graduates of the program will be able to leverage resources from both countries to solve problems of mutual interest at the highest level.

Background and Rationale

Diseases of plants cause significant crop losses worldwide. Many plant diseases are cosmopolitan in their distribution, and many others are introduced to new regions and initiate epidemics each year. Plant Pathology (the study and management of plant disease) is, consequently, a global activity, and graduate education in this discipline should promote the development of a workforce that is diverse and globally-engaged. Employees that can function effectively across borders are in demand by business, academia, and government agencies. Graduate Plant Pathology programs in the United States (U.S.) attract talented students from all over the world. Fluency in English is an important goal for these international students, because English is the international language of science, and most scientists at the top levels are expected to communicate and publish in English and to follow the norms of scientific practice and inquiry that are emphasized in U.S. graduate programs. The participation of international students in U.S. Plant Pathology graduate programs certainly helps their U.S. counterparts to develop an expanded worldview. However, the U.S. graduate students typically have few opportunities to engage in the extended periods of study abroad that are necessary to develop practical fluency in another language and culture. Our goal is to strengthen and deepen the educational experiences of both U.S. and Brazilian Plant Pathology graduate students by instituting this dual degree program.

Brazil is a major agricultural producer and international supplier of agricultural commodities. It also represents a huge market for U.S. agricultural products and technology. Brazil is one of the rapidly growing BRIC economies, and it has invested heavily in biotechnological innovation, including in the area of biofuels where it is a recognized world leader. Most of the major multinational agricultural corporations have significant presences in Brazil, and the U.S. government is increasingly involved in partnerships with the country to promote our common interests. Brazil has an active research community working in support of its agricultural enterprise. The state sponsored universities and research institutes are extremely well equipped and staffed with a highly educated workforce. Brazil is a geographically, culturally, and economically diverse country that offers a unique international experience for U.S. students. Educational exchanges are likely to be mutually beneficial for U.S. and Brazilian researchers, and to lead to faster progress in solving problems of mutual interest.

UFV was established in 1926 based on the U.S. land grant college model, and its educational system is similar to that of U.S. universities. Its first president was Dr. Peter Henry Rolfs, originally from the University of Florida, who established UFV's long tradition of collaboration with international institutions. UFV has played a major role in the development of Brazilian agriculture. It has trained several generations of plant and agricultural scientists now working at other universities and at Embrapa, Brazil's largest agricultural research institution. UFV is consistently ranked as one of the top agricultural schools in Brazil. Furthermore, UFV provides a welcoming environment for international students: students from dozens of countries in North and South America, Europe, and Asia study there each year. UK already has an extensive history of collaboration with UFV, and the UK International Center recently selected UFV as one of only nine foreign universities worldwide, and the only one in the Western hemisphere, to be a key partner in future internationalization initiatives. In addition to individual faculty research collaborations that have included graduate student visits of up to one year in duration and visiting faculty exchanges, undergraduate students from the Department of Biosystems and Agricultural Engineering (BAE) at UK have been traveling to UFV for nearly a decade to take classes and to obtain cultural exposure during a semester abroad. Their experience has been uniformly excellent.

The Department of Plant Pathology (Departamento de Fitopatologia) at UFV consists of 18 faculty members engaged in a broad range of basic and applied research (<http://www.dfp.ufv.br/>). The faculty has an excellent international reputation, and a collective research focus on disease management, particularly via sustainable methods e.g. biological control. Abbreviated CVs for faculty who would be involved in the dual degree program are included in **APPENDIX 1**. Note that most of the faculty earned their Ph.D. degree at a U.S. or European university, and all

participating faculty have research experience in the U.S. or Europe and are fluent in English. The department is housed in a modern building on the UFV campus that is well equipped for all types of research, including access to some facilities (e.g. an electron microscopy unit) that Plant Pathology researchers at UK lack. The curriculum offered by the department is very traditional, including foundational laboratory courses (i.e. applied plant mycology, nematology, virology, and bacteriology) that have been discontinued (primarily due to limitations in funds and teaching lab space) at UK and many other U.S. universities. These laboratories offer an opportunity for our dual degree students to obtain a level of practical training in Plant Pathology that is currently unavailable at UK.

The Department of Plant Pathology at UK has consistently been ranked among the top five departments for Plant Pathology research in the United States (<http://www2.ca.uky.edu/agcollege/plantpathology/index.html>). It is a relatively small department (11 faculty members), split between basic research and extension. Both groups participate in graduate teaching. Coursework in the department is focused on developing critical thinking, research, and communication skills. The research faculty members are internationally known for their basic studies of the mechanisms of plant-microbe interactions, and they attract talented graduate students from all over the world. The outstanding extension faculty members are engaged mostly in applied disease management research that is focused on the needs of Kentucky growers, and some of them have extensive international experience in their own right. Their ability to advise graduate students is limited because their extension duties require significant amounts of travel and time devoted to grower and agent training. As a result, the department currently serves students interested in basic molecular or cellular research extremely well, but it is not as well equipped for students who are more interested in applied research and disease management.

These two strong departments complement one another very well in their respective strengths and resources. The dual degree student would be able to draw on the particular strengths of both in order to obtain a well-rounded education in Plant Pathology, as well as a working familiarity with a broad range of crops and diseases, and with both cultures and languages. We anticipate that graduates of this program would be highly competitive for jobs in both the U.S. and Brazil.

Curriculum

The recommended core curriculum for the dual degree program provides a rigorous and comprehensive education in both basic and applied Plant Pathology, with an emphasis on critical thinking, communication, and research methodologies. Brazilian students will be required to have an M.S. degree in Plant Pathology before entering the program (this is already the requirement for

entering Ph.D. students there). M.S. programs in Plant Pathology are rare in the U.S. and more than 95% of our domestic students come directly to our program from an undergraduate major in one of the natural sciences. Thus, an M.S. will not be required for the U.S. students. As a result, courses other than the core will vary somewhat for each student in the program. Additionally, individual dissertation advisory committees may choose (by majority vote) to waive some of these core requirements and replace them with other courses, if that seems to fit the student's background and goals better.

Core Courses for the Dual Degree: 24-25 hours (PPA are courses at UK, FIP are courses at UFV). Syllabi for these courses are included in **APPENDIX 2**.

Population Biology (1-3 credits) (PPA 641 (1 credit¹) **OR**² FIP 680 (3 credits)

Disease Diagnosis (3 credits) (PPA 640)

Critical Research Methods (3 credits³) (PPA 600)

Physiology of Plant Health and Disease (3-4 credits) (FIP 701, **OR**² PPA 500 (3) **and** PPA 673 (1))

Mycology (3 credits) (FIP 610⁴)

Bacteriology (3 credits) (FIP 640⁴)

Virology (3 credits) (FIP 630⁴)

Nematology (3 credits) (FIP 620)

Seminar (1 credit) (PPA 799)

A three-credit statistics course is a pre-requisite to the program, and can be taken concurrently.

1. The PPA course is currently listed at only one credit, based on class-meeting time per week, **HOWEVER**, it includes a substantial amount of work that is done outside the regular class period, and after review, UFV faculty agreed that it is equivalent in depth of coverage to FIP 680. An application will be made in the near future to increase the credits for this course.
2. After review by both UK and UFV Plant Pathology faculty, these courses or course combinations have been accepted as equivalent.
3. This course is currently listed at 2 credits but an application will be made in the near future to increase it to 3 credits, because of the significant amount of independent work it requires outside of class.
4. There are three courses that are currently offered for the UK degree (at least two of the three are required) that were not considered equivalent by UFV for their degree, because they do not include laboratories. These courses are PPA 650 (Mycology), PPA 670 (Plant Bacteriology) and PPA 671 (Advanced Plant Virology). The corresponding UFV courses (FIP 610, 630, and 640) contain similar lecture material **PLUS** laboratory exercises, and thus we consider them to be acceptable substitutes for our own courses in these areas for the dual degree students. Because our degree is a more research-intensive degree than the typical UFV (non-dual) degree, our **non-dual** degree students are able to obtain sufficient laboratory experience and training during the process of conducting their dissertation research.

Typical (existing) program for a **non-dual degree** U.S. student entering with a B.S. in Plant Science:

Yr:Semester	1:1	1:2	2:1	2:2	3:1	3:2	4:1	4:2
Classes	PPA 400G ¹	PPA 600	PPA 640	PPA 650	Electives	QUALS	PPA 767	PPA 767
	PPA 500	PPA 794	PPA 641	PPA 670 OR PPA 671	PPA 794	PPA 767		
	PPA 794	PPA 799	PPA 673	PPA 794				
			PPA 794					
Total Graduate Credit	6	9	9	9	9	2	2	2

1. If the student has taken a Plant Pathology course previously they will not need to take PPA 400G. PPA 400G does not count toward the total required credits for the PhD degree.

An example of the program for a U.S. student entering the **dual degree** program with a B.S. in Plant Science. Shaded boxes indicate time spent at UFV.

Yr:Semester	1:1	1:2	2:1	2:2 ³	3:1	3:2	4:1	4:2
Classes	PPA 400G ¹	PPA 600	PPA 640	FIP 630	FIP 610	QUALS	PPA 767 ⁶	PPA 767
	PPA 500	A&S 103 ²	PPA 641	FIP 640	FIP 620	PPA 767		
	PPA 794	PPA 794	PPA 673	PPA 794 ⁴	PPA 794			
		PPA 799	A&S 104 ²					
			PPA 794					
Total Graduate Credit	6	9	9	9 ⁵	9	2	2	2

1. If the student has taken a Plant Pathology course previously they will not need to take PPA 400G. PPA 400G does not count toward the total required credits for the PhD degree.
2. Portuguese levels 1 and 2: These courses are currently being offered by the Department of Hispanic Studies on a trial basis. In addition to taking these courses if available, the students will improve their conversational abilities by engaging with their visiting Brazilian counterparts in the dual degree program. If the courses are not available, the students would benefit from taking Spanish language courses instead.
3. The student will enroll in a noncredit six-week intensive Portuguese course upon arrival in Brazil in January.
4. PPA 794 is Dissertation Research. The student will receive credit for this course based on their independent research performed in the host laboratory. This research will be part of a collaborative project between the host laboratory and the student's home laboratory, and will comprise part of the student's dissertation.
5. Nine credits for the FIP courses will be transferred, the maximum allowable.
6. Post-qualifying research credit.

Typical (existing) program for a **non-dual degree** Brazilian student entering UFV with a M.S. in Plant Pathology: **Guidelines for the Ph.D. degree at UFV are included in APPENDIX 3.**

Yr:Semester	1:1	1:2	2:1	2:2	3:1	3:2	4:1	4:2
Classes	FIP 701	FIP 630	FIP 610	PPA 680	FIP 797 ⁴	QUALS	Research	Research
	FIP 603 ²	FIP 640	FIP 620	FIP 704 ³	Research ⁵	Research		
Total Graduate Credit	8	6	6	6	2	0	0	0

1. A total of at least 24 credits is required for completion of the degree at UFV for a student who enters with an M.S. (APPENDIX 3).
2. FIP 603: Clinica de Doencas de Plantas, Plant Disease Clinic (Disease Diagnosis).
3. FIP 704: Metodos em Fitopatologia Molecular (Methods in Molecular Phytopathology). This class covers techniques that are also discussed in PPA 660, but with much less emphasis on critical analysis of publications.
4. Student seminar. Analogous to our PPA 799.
5. Dissertation research. Not associated with a course number and not awarded credits at UFV. Analogous to our PPA 794 and PPA 767.

An example of the **dual degree** program for a Brazilian student¹. Shaded boxes indicate time spent at UK.

Yr:Semester	1:1	1:2	2:1	2:2	3:1	3:2	4:1	4:2
Classes	FIP 701	FIP 630	FIP 610	PPA 600	PPA 640	QUALS	PPA 749	Research
	PPA 680	FIP 640	FIP 620	PPA 794	PPA 794	PPA 767		PPA 767
				Elective	PPA 799	Research		
Credit				9 UK credit	9 UK credit	2 UK credit	0 UK credit	2 UK credit

1. UFV students will be required to have completed a M.S. before beginning the dual degree Doctoral program. This will substitute for one year of the required pre-qualifying residency for the UK degree. Prior to coming to UK they would need to achieve a score of 79 or higher on the TOEFL.

Student Learning Outcomes for the Dual Degree

1. Students will demonstrate technical mastery of the core information and principles of the discipline, including essential factual information, historical context, current literature and issues, practical applications, and professional ethics.
2. Students will demonstrate abilities to think critically, solve problems, work collaboratively, use technology (including information technology) effectively, and develop and carry out high quality, hypothesis driven research.

3. Students will demonstrate mastery of oral and written scientific communication in English.

Student Learning Outcomes As Addressed in Core Courses

Title	Course	Objective
Population Biology	PPA 641, OR FIP 680	Describe how plants and associated microorganisms behave and evolve in populations, including concepts of selection and gene flow. 1,2
Disease Diagnosis	PPA 640	Be able to diagnose diseases caused by major groups of pathogens including fungi, viruses, bacteria, nematodes, and abiotic causes, using the scientific method. 1,2,3
Critical Research Methods	PPA 600	Be able to access information from the literature, and critically evaluate and apply that information. Be able to design statistically valid experiments and interpret the data from those experiments. Be able to write persuasively and make logically sound arguments in scientific papers in English. 1,2,3
Physiology of Plant Health and Disease	PPA 500 and PPA 673, OR FIP 701	Explain and predict how disease affects the normal physiology of the host plant. Describe the genetics and physiology of plant resistance to pathogens, and predict the performance of resistance sources over time when they are deployed in the field. 1,2
Mycology	FIP 610	Be able to identify major groups of fungi in culture and/or <i>in planta</i> , describe the major types of diseases caused by fungi, explain how fungal life cycles and structures relate to their pathogenicity to plants and to disease management. 1,2
Bacteriology	FIP 640	Be able to identify major groups of bacteria in culture and/or <i>in planta</i> , describe the major types of diseases caused by bacteria, explain how bacterial life cycles, traits and behaviors relate to their pathogenicity to plants and to disease management. 1,2
Nematology	FIP 630	Be able to identify major groups of plant-pathogenic nematodes. Describe the major types of diseases caused by nematodes, explain how nematode life cycles, traits, and behaviors relate to their pathogenicity to plants and to disease management. 1,2
Virology	FIP 620	Be able to identify major groups of viruses, describe the major types of diseases caused by viruses, explain how viral traits and behaviors relate to their pathogenicity to plants and to disease management. 1,2
Seminar	PPA 799	Display oral communication skills in the English language, including organization and presentation of background information and research findings, and delivery of a logical, evidence-based argument. 1,2,3

Research	PPA 794	Develop and carry out high quality, hypothesis driven research. 1,2,3
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Doctoral Advisory Committee

The doctoral advisory committee will include one or more members from the partner institution, who will host the student in their laboratory(s) during their exchange. The student will have annual committee meetings, with all committee members attending either in person or via the internet, e.g. Skype. During the first committee meeting, a plan of coursework and travel will be presented, as well as a general overview of the research to be undertaken. For the second committee meeting, the student will prepare a literature review (in English) that will eventually form the first chapter of their dissertation. UFV faculty members who participate on these joint advisory committees will be added to the faculty roster of the UK Graduate School, after their credentials have been verified accordingly. Likewise, UK faculty participating in the dual degree program will be designated as adjunct faculty of UFV in accordance with their established process. This has already been successfully achieved for several faculty in Biosystems and Agricultural Engineering from UFV and from UK.

Graduate Degree Requirements

Qualifying Examination

Each student will be required to pass a written and an oral qualifying examination before he or she may be admitted to candidacy for the dual doctoral degree. The existing process for the qualifying examination at both institutions is similar. The qualifying examination for the dual degree students will be administered jointly by all the members of the student's advisory committee, and will take place in the student's home department. The qualifying examination will emphasize knowledge in the discipline contained within the core courses, as well as critical thinking and logic, and oral and written communication. Members of the committee from the partner institution will attend the oral examination in person, if possible, but if not possible they may attend the examination via Skype or similar electronic means. The examination will be given primarily in English, although it will be permissible for Brazilian committee members to translate questions and answers for the Brazilian students and for the UK professors participating, as necessary, to ensure that the questions and answers are clear to all parties.

Doctoral Dissertation

Each student must write a dissertation based on original research. It is anticipated that dual degree students will be involved in joint research projects between laboratories at both universities. Thus, some of the work for the dissertation will be completed at the partner university and some at the home university. The dissertation will be written in English, with summaries written in both English and Portuguese. The dissertation will be defended at the home institution, in the presence of all members of the joint advisory committee, and it must meet or exceed the usual expectations for dissertations, in terms of both quantity and quality of research, at both institutions. Members of the committee from the partner institution will attend in person, if possible, but if not possible they may attend the examination via Skype or similar electronic means. For Brazilian students defending in Brazil, UK will appoint an outside examiner, consistent with UK Graduate School policy, and the outside examiner may also attend the examination via Skype or similar electronic means. All students will be expected to defend their dissertation in English.

It may not be clear why the dissertation should be written and defended in English, which seems to disadvantage the Brazilian students relative to the U.S. students. This is because an important goal of the dual degree program is to have the Brazilian students develop their skills in English to a level that is sufficient to engage readily in both oral and written scholarly communication in our discipline. English is the international language of science, and it will be very important and advantageous for the Brazilian students to have the high level of English language skill that is demonstrated by writing their dissertation and defending it in English. The Department of Plant Pathology at UFV has already been moving in the direction of having all their students write their dissertations in English. Since all of the participating UFV faculty members have an excellent command of the English language, this will not be a problem. Although it would be desirable for the U.S. students to achieve a similar level of ability in Portuguese, this will not be a requirement of the degree. Some of the U.S. students may already have Portuguese, or more commonly Spanish language skills, when enrolling. They will take one or more introductory Portuguese language courses at UK if these are available (there are two, A&S 103 and A&S 104, currently being offered on a trial basis through the Department of Hispanic Studies). UFV also offers a noncredit six-week “immersion” course in the Portuguese language and Brazilian culture for all new international students each January. The dual degree U.S. students will be required to take this class when they arrive in Brazil for their 12-month exchange. The U.S. students at UFV will be permitted to conduct all of their formal course assessments (tests, written papers) in English (confirmed by the letter from the UFV Director of Graduate Studies, **APPENDIX 4**). Because the participating faculty and many of the Brazilian graduate students speak English well, we don’t anticipate that our U.S. students will

have significant language difficulties with their class or laboratory work. Even a relatively modest level of language proficiency achieved by our U.S. students will be highly advantageous when competing for jobs that involve travel to Brazil and/or collaboration with Brazilian counterparts.

The U.S. and Brazilian dual degree students will fulfill all of the existing requirements for the Plant Pathology degree at UK. These requirements include: completion of four residency semesters prequalifying and two residency semesters postqualifying; successful completion of all core course requirements (unless waived by the student's committee); passing a written and oral qualifying examination, presentation of three seminars, one of which will be graded as PPA 799; and completion and defense of a dissertation based on original independent research. U.S. students will transfer a total of 9 credits from UFV toward their degree. According to Graduate School regulations, up to 25% of the total pre-qualifying credits earned can be transferred. As UK allows, the M.S. will replace two of the four prequalifying semesters for the Brazilian students. Brazilian students will obtain the other two prequalifying semesters during their stay at UK. They will do one of their three required seminars, in English, during their stay at UK. This is the seminar that will be graded for the required PPA 799 course. They will do the other two seminars (one of which will be their exit seminar) in Brazil, and these seminars will be broadcast over the internet so that all committee members and interested department members at UK can attend. Their final seminar will be in English, but the first seminar could be in either Portuguese or English. Brazilian students will register in absentia for at least two postqualifying semesters of PPA 767, including the semester they take their qualifying exams and the semester they defend, and they will register in PPA 749 for 0 credits for the remainder so that they will not need to pay tuition. In Brazil, students are fully supported by the government for up to four years and they attend school tuition-free during that time. Unlike UK, UFV does not have specific residency requirements. UFV will consider that the U.S. students have met their requirements for their Doctoral degree if they complete the core courses (unless waived by the student's committee), and complete and defend a dissertation based on original independent research.

With the exception of the transfer courses, and the co-supervision of doctoral theses, the program of study for Brazilian students at UK contains exactly the same elements as for current doctoral students in Plant Pathology who enter with a Masters degree or the equivalent.

Additional procedures, requirements and policies

Selection procedures

Admission requirements for each university will be the same as those for regular (non-dual degree) students. Brazilian students will be required to have a M.S. in Plant Pathology or a related discipline before embarking on Doctoral studies. Most U.S. students probably will not have a M.S., as this is less common in the U.S. English proficiency will be required for Brazilian candidates, who will need to receive a score of 79 or higher on the Test of English as a Foreign Language (TOEFL) in order to enroll in the UK graduate program. A similar level of Portuguese proficiency is not required by UFV for U.S. candidates, but these candidates would be expected to enroll in Portuguese language classes at UK, if available, (e.g. A&S 103, 104), and spend some time improving their conversational abilities with their Brazilian dual degree colleagues and by self-study prior to traveling to Brazil. Once in Brazil, the U.S. students will be required to enroll in the accelerated language course offered for all international students by that University.

Attendance at the partner university

Each student must spend at least one continuous year (12 months) of their program at the partner institution prior to their qualifying examinations. During this year they will engage in a combination of course work and research. The research will usually be part of their dissertation research. Students may also travel to the other country for shorter periods post-qualifying, as funds allow, in order to perform parts of their own research in a field or lab setting there.

It is anticipated that the majority of students in the program will be involved in joint research projects between labs at UK and UFV. There are many areas of potential collaboration between the respective faculties, and various sources of funding from U.S. and Brazilian agencies that could be applied for. In this regard, it is important to point out that plant diseases that are common in Brazil, with its much greater diversity of climates, biodiversity, and cropping systems, have the potential to seriously impact U.S. agriculture if they are introduced here. One good example is soybean rust, which has been a serious problem in Brazil for many years before it was introduced to the southern U.S. Another example is wheat blast, which is causing significant damage in Brazil currently and was detected in the U.S. for the first time right here in Kentucky last year. U.S. funding agencies or private companies should be willing to fund joint research if it involves pathogens that are currently present in Brazil and that threaten U.S. agriculture in the future. It is hoped that the presence of the dual degree program will result in increased levels of research funding for both institutions from both governments.

APPENDIX 1

Abbreviated CVs (in English) of UFV Faculty who would be involved in the dual degree.

List of Faculty:

Robert Weingart Barreto
Sérgio Hermínio Brommonschenkel
Claudine Márcia de Carvalho
Leandro Grassi de Freitas
Eduardo Seiti Gomide Mizubuti
José Rogério de Oliveira
Emerson Medeiros del Ponte
Fabrício de Ávila Rodrigues
Francisco Murilo Zerbini Júnior

Curriculum Vitae

Robert Weingart Barreto

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Department of Plant Pathology	Tel. (Lab): +51 3 899 2625
Laboratory of Mycology	Fax: +55 31 3 899 2240
Viçosa, Minas Gerais, Zip Code 36570-900, Brazil	Email: rbarreto@ufv.br

Education and Training

M.Sc. In Pure and Applied Taxonomy, University of Reading, Berkshire, U.K., 1986

Ph.D., Botany, University of Reading, Berkshire, U.K., 1996

Post Ph.D, Centraalbureau voor Schimmelcultures, Utrecht, NL, 2011

Publications in Refereed Journals (from 2010 to 2014)

Coutinho FMF, Macedo DM, Barreto RW (2014) First report of gray mold (*Amphobotrys ricini*) on copperleaf (*Acalypha wilkesiana*) in Brazil. *Plant Disease* 98:276-276.

Miranda BC, Cardoso A, Barreto RW (2014). First Report of *Rhizoctonia solani* AG-1-IB causing leaf blight of sorrel (*Rumex acetosa*) in Brazil. *Plant Disease* 98:278-278.

Duarte LL, Choi Y-J, Soares DJ, Barreto RW (2014) *Plasmopara invertifolia* sp. nov. causing downy mildew on *Helichrysum bracteatum* (Asteraceae). *Mycological Progress* 13:285-289.

Guatimosim E, Pinto HJ, Barreto RW, Prado J (2014) *Rhagadolobiosis*, a new genus of Parmulariaceae from Brazil with a description of the ontogeny of its ascospores. *Mycologia* 106:276-281.

Colman A, Silva RA, Alves R, Silva M, Barreto RW (2014) First report of causing leaf spots on in Brazil. *Plant Disease* 98:849-849.

Guatimosim E, Schwartsburd PB, Barreto RW (2014) A new *Inocyclus* species (Parmulariaceae) on the neotropical fern *Pleopeltis astrolepis*. *IMA Fungus* 5:51-55.

Colman A, Macedo DM, Barreto RW (2014) First report of downy mildew (*Hyaloperonospora lunariae*) on white mustard (*Sinapis alba*) in Brazil. *Plant Disease* 98:1007-1007.

Lima RD, Santin AM, Seni DJ, Dietrich A, Salazar LA, Subbotin AS, Mundo-Ocampo M, Goldenberg R, Barreto RW (2013) *Ditylenchus gallaeformans* sp. n. (Tylenchida: Anguinidae) a neotropical nematode with biocontrol potential against weedy Melastomataceae. *Nematology* 15:179-196.

Curriculum Vitae

Sérgio Hermínio Brommonschenkel

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B.A., Agronomy, Viçosa Federal University, 1984

M.Sc. Plant Pathology, Viçosa Federal University, 1988

Ph.D., Plant Breeding and Genetics, Cornell University, Cornell, U.S.A., 1995

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Curriculum Vitae

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Curriculum Vitae

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Education and Training

B.A., Agronomy, Viçosa Federal University, 1988

M.Sc. Plant Pathology, Viçosa Federal University, 1991

Ph.D., Plant Pathology, University of California, Davis, U.S.A., 1996

Sabbatical. Molecular Biology Applied to Virology, University of South Carolina, Columbia, U.S.A., 2002

Publications in Refereed Journals (from 2010 to 2014)

Paz-Carrasco L, Castillo-Urquiza GP, Lima ATM, Xavier CAD, Vivas-Vivas L, Mizubuti ESG, Zerbini FM (2014) Begomovirus diversity in tomato crops and weeds in Ecuador and the detection of a recombinant isolate of rhynchosia golden mosaic Yucatan virus infecting tomato. *Archives of Virology* 159: 2127-2132.

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APPENDIX 2

Syllabi for courses included in the dual-degree required curriculum
List of courses included:

PPA 500
PPA 600
PPA 640
PPA 641
PPA 673
FIP 610
FIP 620
FIP 630
FIP 640
FIP 680
FIP 701

PPA (PLS 640) – Identification of Plant Diseases, Fall Semester, 2014
Syllabus and Course Requirements

INSTRUCTOR

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PURPOSE

PPA (PLS) 640 is intended to give graduate students practical exposure to plant pathology and science-based diagnostics. The objectives of PPA (PLS) 640 are to learn the processes involved in diagnosing plant diseases and making control recommendations, recognize common diseases found on various hosts in Kentucky, understand the workings of Extension plant pathology, and be exposed to the Kentucky agricultural industry.

PREREQUISITES

The students are required to have taken PPA 400G (Principles of Plant Pathology) or its equivalent from another institution. Students are expected to be familiar with microbiology, including mycology, and microscopy.

CLASS MEETINGS

Class will be held in the Ag North Greenhouse Teaching Classroom / Laboratory. The classroom portion of PPA/PLS 640 will meet once or twice per week from June 9 through August 12, and we will hold two class meetings after the beginning of the Fall 2014 semester.

Each class will consist of lectures, demonstrations, diagnosis of specimens, and discussion. We will also take field trips to view diseases and agricultural production around Kentucky. Date, duration, and location of these trips will be listed in the class schedule to be distributed on the first day of class.

Classroom space and supplies will be provided for students to examine specimens and make cultures. Basic reference materials will be provided in the class library. Additional reference materials may be used in the Plant Disease Diagnostic Laboratory; however, these references are not to be removed from the laboratory. Students will be allotted space in the Greenhouse Teaching Classroom/Laboratory walk-in cold room for storage of specimens. *Students are encouraged, but not required, to bring a digital camera to each session.*

Students will be expected to read the Kentucky Pest News (KPN) newsletter. Issues of KPN can be obtained by subscribing to the KPN Listserv at www.uky.edu/kpn. From the main menu, select 'Subscribe' and follow instructions. Past issues of KPN are available under 'Previous Issues' at www.uky.edu/kpn.

STUDENT RESPONSIBILITIES

General. Using specimens provided by the instructors, students will diagnose samples during lab sessions. Students will work on samples in groups of 2-3, and a brief, written report will be expected for each sample (example format will be provided). Disease reports are to be kept in a

lab notebook that will serve as a study guide for later exams, so each student will be expected to complete a report for each diagnosis. Each group will be responsible for presenting their findings to the class for ONE of the assigned samples (selected by the instructor), so that all samples are discussed before the end of the lab session. Each group member must participate in the presentation to the class.

Disease Collection. Each student must collect and diagnose 10 specimens of disease on different types of plants over the summer, as follows:

2 – field crops

2 – vegetable crops

2 – ornamentals and landscape/forest trees

2 – fruits

2 – turf and forages

The disease collection must be turned in by August 15. A complete collection will consist of fresh or preserved specimens along with supporting materials (illustrations of pathogen signs or digital images, diagnostic tests, etc.). A **brief** written report also is required that identifies each disease and its importance, the causal agent, symptoms and signs, disease cycle, and control measures. Diseases that have been diagnosed during class may be included in the disease collection; however, students must use materials that they have collected on their own or during field trips (not specimens provided during lab).

EXAMINATIONS

Students will be expected to understand and apply the general principles and practices of plant disease diagnosis. In addition, they will recognize or know how to diagnose the diseases of samples with which they have worked **plus** important diseases of other crops discussed by the instructor and other students. Students will also be expected to be familiar with information presented in the weekly Kentucky Pest News and other practical plant disease information introduced during class-related activities. **All examinations are 'open book' - the use of class notes is permitted.**

CRITERIA FOR GRADING STUDENTS IN PPA (PLS) 640

First examination: 100 points

Second examination: 100 points

Final examination: 100 points

Disease collection: 100 points

Score will be based on quality of specimens, accuracy of diagnoses, and quality of written reports (clear documentation of importance, disease cycles, symptoms, signs, identification, and management practices).

Class Participation: 100 points

Score will be based on class attendance (two excused absences are permitted during the semester; each additional absence will result in a loss of 10 class participation points), oral diagnostic reports, and participation in discussions during class or field trips.

PPA 654: Advanced Plant Disease Resistance

Semesters taught: Every fall.

Credit hours: 1

Prerequisites: PPA 400G, PPA 500, PPA 600

Requirement: Option to fulfill the requirement for two courses in Advanced Plant Pathology (PPA 65x)

Organizer and Instructor: Pradeep Kachroo

Major Teaching Objectives: Give student an in-depth understanding of the interaction between host and pathogen. Emphasis is on the host defense signaling.

Readings: At least 1 week before each lecture, students will be assigned one review paper and one recent research paper for that lecture.

Topics:

- Lecture 1 Genetic analysis of plant disease interactions
Gene for Gene interaction
- Lecture 2 Mapping, map based cloning of genes,
- Lecture 3 R gene structure and function
- Lecture 4 Hypersensitive response, Lesion mimics
- Lecture 5 Downstream signaling, signal transduction
- Lecture 6 Signaling and disease resistance
- Lecture 6 SA and disease resistance
- Lecture 7 JA/ethylene and disease resistance
- Lecture 8 **Midterm exam**
- Lecture 9 FA signaling and disease resistance
- Lecture 10 NO and disease resistance
- Lecture 11 Cross talk and comparison of R signaling pathways against virus,
bacterial, oomycete and fungal pathogens
- Lecture 12 Virus-induced gene silencing
- Lecture 13 Virus-induced gene silencing
- Lecture 14 Resistance via tolerance

Assignments, Exams and Grades:

Participation: 40 pts

Midterm exam: 30 pts

Final exam: 30 pts

Grades: 90-100%, A; 80-89%, B; 70-79%, C; <70%, D



UNIVERSIDADE
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COURSE PROGRAM

Nº

SHEET:

INITIALS:

IDENTIFICATION

COURSE: PHYTOMYCOLOGY (Fitomicologia)		CODE: FIP 610	
DEPARTMENT: PLANT PATHOLOGY (Fitopatologia)		ADMINISTRATIVE UNIT CODE: CCA	
DURATION IN WEEKS 15	NUMBER OF HOURS PER WEEK		TOTAL NUMBER OF HOURS 90
LECTURES: 02	LABORATORIES: 04	TOTAL: 06	
CREDIT NUMBER: 04	SEMESTER: 1		
PRE-REQUISITES		PRE OR CO-REQUISITES	

CONTENT

Evolution, systematics and classification of the fungi. Fungal genetics. Fungal physiology. Fungi of the Kingdom Protista. Fungi of the Kingdom Chromista / Straminipila. Fungi of the Kingdom Fungi. Control of fungal diseases.

OFFERED TO THE FOLLOWING PROGRAMS (ONLY FOR UNDERGRADUATE LEVEL COURSES)

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2.	()	8.	()
3.	()	9.	()
4.	()	10.	()
5.	()	11.	()
6.	()	12.	()

(OB)= OBLIGATORY (OP)= OPTIONAL

Nº DA ATA DA REUNIÃO:

DATA DE APROVAÇÃO:

____/____/____

____/____/____

CHEFE DO DEPARTAMENTO

ALTERAÇÃO APROVADA PELO CTP CTG

Nº DA ATA DA REUNIÃO

DATA DE APROVAÇÃO:

____/____/____

____/____/____

PRESIDENTE DO CONSELHO

APROVAÇÃO

DA COORDENAÇÃO DE ENSINO,
PESQUISA E EXTENSÃO - CEPE

Nº DA ATA DA REUNIÃO

DATA DE APROVAÇÃO

____/____/____

____/____/____

SECRETÁRIO DE ÓRGÃOS COLEGIADOS



UNIVERSIDADE
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VIÇOSA

COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

PHYTOMYCOLOGY

CODE:

FIP 610

UNITS AND TOPICS

LECTURES

LABORATORY
SESSIONS

NUMBER OF
HOURS PER WEEK

1. Evolution, systematics and classification of the fungi.		02
2. Fungal genetics.		02
3. Fungal physiology.		02
4. Fungi of Kingdom Protista.		01
5. Fungi of the Kingdom Chromista / Straminipila		03
6. Fungi of the Kingdom Fungi:		16
6.1. Phylum Chytridiomycota;		
6.2. Phylum Zygomycota;		
6.3. Phylum Ascomycota;		
6.4. Phylum Basidiomycota.		
7. Controle de doenças fúngicas		04

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COURSE PROGRAM (continued)

N^o

SHEET:

INITIALS:

COURSE:

PHYTOMYCOLOGY

CODE:

FIP 610

UNITS AND TOPICS	<input type="checkbox"/> LECTURES	<input checked="" type="checkbox"/> LABORATORY SESSIONS	NUMBER OF HOURS PER WEEK
01. Basic methods in mycology: collection and processing, microscopy and literature.			04
02. Fungal genetics lab: isolation, cultivation, and conservation of cultures.			04
03. Fungal genetics lab.			04
04. Observation of mixomycetes			02
05. Genera <i>Pythium</i> and <i>Phytophthora</i> .			02
06. Peronosporales			04
07. Chytridiomycota.			02
08. Zygomycota.			02
09. Anamorphs.			16
10. Ascomycota.			08
11. Basidiomycota			08
12. Control of fungal diseases.			04

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VIÇOSA

BIBLIOGRAPHIC
REFERENCES

Nº

SHEET:

INITIALS:

CODE:

PHYTOMYCOLOGY

CODE:

FIP 610

ALEXOPOULOS, C.J., MIMS, C.W. & BLACKWELL, M. 1996. *Introductory Mycology*. John Wiley & Sons, New York.

CARLILE, M.J., WATKINSON, S.C. & GOODAY, G.W. 2001. *The Fungi*. Academic Press.

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HOLLYDAY, P. 1980. *Fungus Diseases of Tropical Crops*. Cambridge University Press.

GAMS, W., HOEKSTRA, E.S. & APTROOT, A. 1998. *CBS Course of Mycology*. Centraalbureau voor Schimmelcultures.

HENNEN, J. et al. 2005. *Catalogue of the Species of Plant Rust Fungi (Uredinales) of Brazil*. Jardim Botânico do Rio de Janeiro (disponível on-line <http://www.jbrj.gov.br/>).

KIRK, P.F., CANNON, P.F., MINTER, D.W. & STALPERS, J.A. 2008 *Dictionary of the Fungi*. CAB INTERNATIONAL MENDES et al. 1998. *Fungos em Plantas no Brasil*. EMBRAPA.

MUELLER, G.M., BILLS, G.F. & FOSTER, M.S. 2004. *Biodiversity of fungi: inventory and monitoring methods*. Elsevier Academic Press.

WALLER, J. M., LENNÉ, J.M., WALLER, S.J. (Eds). 2001. *Plant Pathologist's Pocketbook*. Oxford University Press.

WEBSTER, J. & WEBER, R.W.S. 2007. *Introduction to Fungi*. Cambridge University Press.

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COURSE PROGRAM

Nº

SHEET:

INITIALS:

IDENTIFICATION

COURSE: PHYTONEMATOLOGY (Fitonematologia)		CODE: FIP 620	
DEPARTMENT: PLANT PATHOLOGY (Fitopatologia)		ADMINISTRATIVE UNIT CODE: CCA	
DURATION IN WEEKS 15	NUMBER OF HOURS PER WEEK		TOTAL NUMBER OF HOURS 60
LECTURES: 02	LABORATORIES: 02	TOTAL: 04	
CREDIT NUMBER: 03	SEMESTER: 1		
PRE-REQUISITES		PRE OR CO-REQUISITES	

CONTENT

History and importance. Morphological and biological characteristics of the nematodes. Ecological relationships. Pathogenic relationships. Interaction of nematodes with other pathogens. Basic considerations for the control of nematodes. Prevention of the spread. Reducing nematode populations through soil management and cultural practices. Control by heat. Biological control of nematodes. Control by chemicals. Use of resistant varieties.

OFFERED TO THE FOLLOWING PROGRAMS (ONLY FOR UNDERGRADUATE LEVEL COURSES)

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2.	()	8.	()
3.	()	9.	()
4.	()	10.	()
5.	()	11.	()
6.	()	12.	()

(OB)= OBLIGATORY

(OP)= OPTIONAL

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CHEFE DO DEPARTAMENTO

ALTERAÇÃO APROVADA PELO CTP CTG

Nº DA ATA DA REUNIÃO

DATA DE APROVAÇÃO:

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PRESIDENTE DO CONSELHO

APROVAÇÃO

DA COORDENAÇÃO DE ENSINO,
PESQUISA E EXTENSÃO - CEPE

Nº DA ATA DA REUNIÃO

DATA DE APROVAÇÃO

_____/____/____

____/____/____

SECRETÁRIO DE ÓRGÃOS COLEGIADOS



UNIVERSIDADE
FEDERAL DE
VIÇOSA

COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

PHYTONEMATOLGY

CODE:

FIP 620

UNITS AND TOPICS	<input checked="" type="checkbox"/> LECTURES	<input type="checkbox"/> LABORATORY SESSIONS	NUMBER OF HOURS PER WEEK
1 History and significance. 1.1. History of nematology. 1.2. Importance of nematodes to agriculture. 1.3. The nematological literature: books, manuals, journals and other references.			02
2. Morphological and biological characteristics of nematodes: 2.1. Anatomy and morphology; 2.2. Types of nematodes and general eating habits; 2.3. Life cycle of parasitic plant species.			06
3 Ecological Relations.: 3.1. Vertical and horizontal distribution of nematodes in the soil; 3.2. Populations and survival; 3.3. Soil environment; 3.4. Plant environment.			02
4 Pathogenic Relations.: 4.1. Symptoms of diseases caused by nematodes; diagnosis; 4.2. Histopathology of plants parasitized by nematodes; 4.3. Biochemical Aspects of diseases caused by nematodes; 4.4. The verification of the plant pathogenic nematodes. Terminology, Methodology.			02
5 Interaction of nematodes with other pathogens: 5.1. Fungi, bacteria and nematodes; 5.2. Transmission of viruses.			04
6 Basic considerations for the control of nematodes: 6.1. Economic aspect; 6.2. Integrated control; 6.3. Annual crops and perennial crops; 6.4. Eradication versus coexistence.			01
7 Prevention of spread: 7.1. Dissemination processes; 7.2. Natural barriers; 7.3. Practices to restrict the spread. Quarantine. Treatment of plants or plant organs with hot water and chemicals. Use of healthy seedlings.			01

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COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

PHYTONEMATOLOGY

CODE:

FIP 620

UNITS AND TOPICS



LECTURES



LABORATORY
SESSIONS

NUMBER OF
HOURS PER WEEK

8 Reduction of nematode population through soil management practices and cultures:

- 8.1. Fallow;
- 8.2. Organic fertilization;
- 8.3. Crop rotation;
- 8.4. Antagonistic plants;
- 8.5. Flooding;
- 8.6. Planting date;
- 8.7. Destruction or removal of infected plants;
- 8.8. Other practices.

04

9 Control by heat:

- 9.1. Heat transfer in the soil;
- 9.2. Methods and equipments;
- 9.3. Solar thermotherapy (soil solarization);
- 9.4. Effects of heat on soil properties.

02

10. Biological control of nematodes:

Nematophagous fungi. General characteristics. Main genera and species; Other organisms (bacteria, viruses, nematodes, protozoa, etc.). Current situation and future prospects.

02

11. Control by chemicals:

Characteristics of the major nematicides; Techniques and dosages of application; Ecological considerations; Problems of residues in food.

02

12 Use of resistant varieties:

Development of new varieties; The nature of resistance; The genetic basis for resistance.

02

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COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

PHYTONEMATOLOGY

CODE:

FIP 620

UNITS AND TOPICS	<input type="checkbox"/> LECTURES	LABORATORY SESSIONS	NUMBER OF HOURS PER WEEK
01 Sample collection and extraction of nematodes: 1.1. Sampling techniques; 1.2. Methods of extraction of nematodes from soil; 1.3. Methods of extraction of nematodes from plant tissue.			04
02 Preparation of slides for examination under a microscope: 2.1. Temporary mounts; 2.2. Permanent mounts; 2.3. Staining of nematodes "in situ" in plant tissues.			04
03 The soybean cyst nematode (<i>Heterodera glycines</i>): 3.1. Techniques for the extraction of larvae, cysts and eggs; 3.2. Resistance of soybean cultivars to nematode; 3.3. Race identification.			04
04 The root-knot nematodes (<i>Meloidogyne</i> spp.): 4.1. Techniques for the extraction of eggs and inoculation of plants. Staining of egg masses; 4.2. Preparation of perineal cuts; 4.3. Polyacrylamide gel electrophoresis for species identification; 4.4. Identification of races.			04
05. Important nematodes: features and significance: 5.1. <i>Pratylenchus</i> and <i>Radopholus</i> ; 5.2. <i>Ditylenchus</i> , <i>Anguina</i> , <i>Bursaphelenchus</i> and <i>Aphelenchoides</i> ; 5.3. <i>Rotylenchulus</i> and <i>Tylenchus</i> ; 5.4. <i>Criconemella</i> , <i>Paratylenchus</i> , <i>Hemicycliophora</i> and <i>Hemicriconemoides</i> ; 5.5. <i>Helicotylenchus</i> , <i>Rotylenchus</i> , <i>Hoplolaimus</i> , <i>Scutellonema</i> , <i>Aorolaimus</i> and <i>Tylenchorhynchus</i> ; 5.6. <i>Longidorus</i> , <i>Paralongidorus</i> , <i>Trichodorus</i> , <i>Paratrachodorus</i> and <i>Xiphinema</i>			14

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BIBLIOGRAPHIC
REFERENCES

Nº

SHEET:

INITIALS:

CODE:

PHYTONEMATOLOGY

CODE:

FIP 620

CHEN, Z. X.; CHEN, S. Y. & DICKSON, D. W. 2004. (ed.) Nematology: Advances and Perspectives Vol 1: Nematode Morphology, Physiology and Ecology. CABI Publishing. Cambridge, MA, USA. 640 p.

CHEN, Z. X.; CHEN, S. Y. & DICKSON, D. W. 2004. (ed.) Nematology: Advances and Perspectives Vol II: Nematode Management and Utilization. CABI Publishing. Cambridge, MA, USA. 608 p.

GAUGLER, R. & BILGRAMI, A. L. 2004. (Editors) Nematode Behaviour. CABI. 432 p.

LUC, M., SIKORA, R. A. & BRIDGE, J. 2005. (ed.) Plant parasitic nematodes in subtropical and tropical agriculture. 2nd edition. CABI. 871 p.

MAI, W. F. & MULLIN, P. G. 1996. Plant-Parasitic nematodes: a pictorial key to genera. 5th. Edition. Cornell Univ. Press. Ithaca. 277 p.

PERRY, R. N. & Moens, M. 2006. (ed.) Plant Nematology. CABI. 480 p.

REGNAULT-ROGER, C., PHILOGÈNE, B. J. R. & VINCENT, C. 2005. (ed.) Biopesticides of Plant Origin. Lavoisier 310 p.

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ZUCKERMAN, B. M., MAI, W. F. & KRUSBERG, L. R. 1990. Plant Nematology Laboratory Manual. The University of Massachusetts Agricultural Experiment Station. Massachusetts, USA. 252 p.

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VIÇOSA

COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

PLANT VIROLOGY

CODE:

FIP 630

UNITS AND TOPICS

LECTURES

LABORATORY
SESSIONS

NUMBER OF
HOURS PER WEEK

1. History and importance of plant virology.		02
2. Symptoms induced by plant viruses in their hosts: 2.1. Macroscopic alterations; 2.2. Microscopic alterations.		02
3. Morphology and structure: 3.1. Morphology; 3.2. Chemical composition and structure of the capsid; 3.3. Nomenclature and taxonomy.		02
4. Strategies of viral replication: 4.1. Stages of the process of establishment of systemic infection; 4.2. Virus replication: Positive RNA viruses; 4.3. Virus replication: Negative RNA viruses; 4.4. Virus replication: DNA genome.		10
5. Cell-to-cell and long-distance movement: 5.1. Cell-to-cell movement via tubules; 5.2. Cell-to-cell movement via increase of plasmodesmal SEL; 5.3. Long-distance movement.		02
6. Subviral infectious agents: 6.1. Viroids; 6.2. Satellite viruses; 6.3. Satellite RNAs.		02
7. Natural transmission: 7.1. Transmission by contact and by seeds; 7.2. Transmission by vectors.		04
8. Control of plant virus diseases. 8.1. Vector control; 8.1. Use of virus-free propagation material; 8.2. Natural resistance; 8.3. Pathogen-derived resistance.		06

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COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

PLANT VIROLOGY

CODE:

FIP 630

UNITS AND TOPICS	<input type="checkbox"/> LECTURES	LABORATORY SESSIONS	NUMBER OF HOURS PER WEEK
01. Artificial transmission of plant viruses; host range.			02
02. Purification of a rod-shaped virus.			04
03. Purification of an isometric virus.			04
04. Optical and electronic microscopy: Observation of cytoplasm inclusions and viral particles.			02
05. Cloning a fragment of a viral genome: 5.1. Extraction and whole-genome amplification of a begomovirus. 5.2. Extraction of viral RNA. 5.3. RT-PCR: Amplification of fragments of a viral genome. 5.4. Ligation of amplified products into plasmid vector. 5.5. Transformation of <i>E. coli</i> . 5.6. Extraction and electrophoretic analysis of recombinant plasmids.			14
06. Analysis of viral sequences.			02
07. Identification of viral suppressors of RNA silencing.			02

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BIBLIOGRAPHIC
REFERENCES

Nº

SHEET:

INITIALS:

CODE:

PLANT VIROLOGY

CODE:

FIP 630

FAUQUET, C.M., MAYO, M.A., MANIOFF, J., DESSELBERGER, U. & BALL, L.A. (Eds.) Virus Taxonomy. Eighth Report of the International Committee on Taxonomy of Viruses. San Diego, EUA: Elsevier Academic Press. 1259p. 2005.

HOGENHOUT, S.A., AMMAR, E.D., WHITFIELD, A.E. & REDINBAUGH, M.G. Insect vector interactions with persistently transmitted viruses. Annu. Rev. Phytopathol. 46:327-359. 2008.

HULL, R. Matthew's Plant Virology (4a ed.). Londres, Inglaterra: Academic Press. 1001p. 2002.

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NG, J.C.K. & FALK, B.W. Virus-vector interactions mediating nonpersistent and semipersistent transmission of plant viruses. Annual Review of Phytopathology 44:183-212. 2006.

ROJAS, M.R., HAGEN, C., LUCAS, W.J. & GILBERTSON, R.L. Exploiting chinks in the plant's armor: Evolution and emergence of geminiviruses. Annual Review of Phytopathology 43:361-394. 2005.

SAMBROOK, J. & RUSSEL, D. Molecular Cloning - A Laboratory Manual (3a ed.). Cold Spring Harbor, EUA: Cold Spring Harbor Laboratory Press. 2344p. 2001.

SIMON, A.E., ROOSSINCK, M.J. & HAVELDA, Z. Plant virus satellite and defective interfering RNAs: New paradigms for a new century. Annual Review of Phytopathology 42:415-437. 2004.

ZERBINI, F.M. & ALFENAS-ZERBINI, P. Métodos em virologia vegetal. pp. 293-358 In: Alfenas, A.C. & Mafia, R.G. (Eds.) Métodos em Fitopatologia. Viçosa, MG: Editora UFV. 2007.

ZERBINI, F.M., ALFENAS, P.F. & ANDRADE, E.C. O silenciamento de RNA como um mecanismo de defesa de plantas a vírus. Revisão Anual de Patologia de Plantas 13:191-246. 2005.

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Excluído: ¶

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COURSE PROGRAM

Nº

SHEET:

INITIALS:

IDENTIFICATION

COURSE: PLANT PATHOGENIC BACTERIA (Bactérias Fitopatogênicas)		CODE: FIP 640	
DEPARTMENT: PLANT PATHOLOGY (Fitopatologia)		ADMINISTRATIVE UNIT CODE: CCA	
DURATION IN WEEKS 15	NUMBER OF HOURS PER WEEK		TOTAL NUMBER OF HOURS 60
LECTURES: 02	LABORATORIES: 02	TOTAL: 04	
CREDIT NUMBER: 03	SEMESTER: 2		
PRE-REQUISITES		PRE OR CO-REQUISITES	

CONTENT

History and economic importance. Anatomy and morphology of the bacterial cell: physiology, bacterial metabolism and growth and main recombination processes. Taxonomy of plant pathogenic bacteria. Symptomatology. Penetration, colonization, movement and multiplication of bacteria during plant infection and histopathological aspects of the colonization process. Seed pathology of plant pathogenic bacteria. Survival and spread of plant pathogenic bacteria: life cycle and its implications to spread and survival. Control methods for bacterial plant diseases.

OFFERED TO THE FOLLOWING PROGRAMS (ONLY FOR UNDERGRADUATE LEVEL COURSES)

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2. ()	8. ()
3. ()	9. ()
4. ()	10. ()
5. ()	11. ()
6. ()	12. ()

(OB)= OBLIGATORY (OP)= OPTIONAL

Nº DA ATA DA REUNIÃO: ____/____/____	DATA DE APROVAÇÃO: ____/____/____	_____ CHEFE DO DEPARTAMENTO
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ALTERAÇÃO APROVADA PELO <input type="checkbox"/> CTP <input type="checkbox"/> CTG	
Nº DA ATA DA REUNIÃO ____/____/____	DATA DE APROVAÇÃO: ____/____/____
_____ PRESIDENTE DO CONSELHO	

APROVAÇÃO DA COORDENAÇÃO DE ENSINO, PESQUISA E EXTENSÃO - CEPE	
Nº DA ATA DA REUNIÃO ____/____/____	DATA DE APROVAÇÃO ____/____/____
_____ SECRETÁRIO DE ÓRGÃOS COLEGIADOS	



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VIÇOSA

COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

PLANT PATHOGENIC BACTERIA

CODE:

FIP 640

UNITS AND TOPICS	<input checked="" type="checkbox"/> LECTURES	<input type="checkbox"/> LABORATORY SESSIONS	NUMBER OF HOURS PER WEEK
1. History and economic importance: 1.1. Introduction; 1.2. General recommendations; 1.3. Bacteriology as a science; 1.4. Economic importance of plant bacterial diseases; 1.5. Plant bacteriologists in Brazil and in the world.			02
2. Anatomy and morphology of the bacterial cell: physiology, bacterial metabolism and growth and main recombination processes			05
3. Taxonomy of plant pathogenic bacteria: 3.1. Positioning of the bacteria in the world of living beings; 3.2. Procaryotes and eucaryotes; 3.3. Taxonomy of the plant pathogenic genera and species; 3.4. The concept of pathovar.			05
4. Symptomatology: 4.1. Main types of symptoms; 4.2. Elementary concepts of physiology of parasitism; 4.3. Primary and secondary factors of pathogenesis; 4.4. Compatible and incompatible associations; 4.5. Hypersensitivity.			04
5. Penetration, colonization, movement and multiplication of bacteria during plant infection and histopathological aspects of the colonization process.			02
6. Seed pathology of plant pathogenic bacteria: 6.1. Association of bacteria with seeds and its plant pathological and epidemiological significance; 6.2. Seed treatment as eradication measure; 6.3. Methods of detection of plant pathogenic bacteria in seeds.			04
7. Survival and spread of plant pathogenic bacteria: life cycle and its implications to spread and survival.			04
8. Control methods of bacterial plant diseases: 8.1. General measures; 8.2. Chemical and biological control; 8.3. Seed certification; 8.4. Antibiotics; 8.5. Induced resistance and its implications; 8.6. Plant growth promoting rhizobacteria as biological control agents.			04



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COURSE PROGRAM (continued)

N^o

SHEET:

INITIALS:

COURSE:

PLANT PATHOGENIC BACTERIA

CODE:

FIP 640

UNITS AND TOPICS	<input type="checkbox"/> LECTURES	LABORATORY SESSIONS	NUMBER OF HOURS PER WEEK
01. Dilution of colonies.			02
02. Isolation of plant pathogenic bacteria from infected plant organs.			02
03. Hypersensitivity test.			02
04. Artificial inoculation.			02
05. Bacterial growth curve.			04
06. Preservation of bacterial cultures by different methods.			02
07. Visualization of bacterial cell and of some structures.			02
08. Seed pathology – rapid detection.			02
09. Determination of a plant pathogenic genus.			02
10. Determination of a plant pathogenic species.			04
11. Bioassays with antibiotics and their application in plant pathology.			02
12. Bacteriocins – bioassays for synthesis detection.			02
13. Bacteriophages – isolation, detection and specificity.			02

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CODE:

FIP 640

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MADIGAN, M. M.; MARTINKO, J. DUNLAP, P.V. & CLARK, D.P. *Brock biology of microorganisms*. 12th ed. Upper Saddle River, Benjamin Cummings, 2008. 1168p.

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DEPARTMENT CHAIR



UNIVERSIDADE
FEDERAL DE
VIÇOSA

COURSE PROGRAM

Nº

SHEET:

INITIALS:

IDENTIFICATION

COURSE: POPULATION BIOLOGY OF PLANT PATHOGENS (Biologia de Populações de Fitopatógenos) *		CODE: FIP 680	
DEPARTMENT: PLANT PATHOLOGY (Fitopatologia)		ADMINISTRATIVE UNIT CODE: CCA	
DURATION IN WEEKS 15	NUMBER OF HOURS PER WEEK		TOTAL NUMBER OF HOURS 60
LECTURES: 02	LABORATORIES: 02	TOTAL: 04	
CREDIT NUMBER: 03	SEMESTER: 1 (even years)		
PRE-REQUISITES		PRE OR CO-REQUISITES	

CONTENT

Concepts of population biology. Basic concepts of evolution. Quantifying genetic diversity. Recombination and variability of populations. Genetic drift and variability of populations. Mutations and variability of populations. Migration and population structure. Selection and variability of populations.

OFFERED TO THE FOLLOWING PROGRAMS (ONLY FOR UNDERGRADUATE LEVEL COURSES)

1.	()	7.	()
2.	()	8.	()
3.	()	9.	()
4.	()	10.	()
5.	()	11.	()
6.	()	12.	()

(OB)= OBLIGATORY (OP)= OPTIONAL

Nº DA ATA DA REUNIÃO: ____/____/____	DATA DE APROVAÇÃO: ____/____/____	_____
		CHEFE DO DEPARTAMENTO

ALTERAÇÃO	APROVADA PELO <input type="checkbox"/> CTP <input type="checkbox"/> CTG
Nº DA ATA DA REUNIÃO ____/____/____	DATA DE APROVAÇÃO: ____/____/____
PRESIDENTE DO CONSELHO	

APROVAÇÃO	DA COORDENAÇÃO DE ENSINO, PESQUISA E EXTENSÃO - CEPE
Nº DA ATA DA REUNIÃO ____/____/____	DATA DE APROVAÇÃO ____/____/____
SECRETÁRIO DE ÓRGÃOS COLEGIADOS	



UNIVERSIDADE
FEDERAL DE
VIÇOSA

COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

POPULATION BIOLOGY OF PLANT PATHOGENS

CODE:

FIP 680

UNITS AND TOPICS	<input checked="" type="checkbox"/> LECTURES	<input type="checkbox"/> LABORATORY SESSIONS	NUMBER OF HOURS PER WEEK
01. Concepts of population biology: 1.1 Terminology 1.2 Introduction to population biology: history, names and concepts			02
02. Evolution: basic concepts			04
03. Quantifying genetic diversity			04
04. Recombination: 4.1. Hardy-Weinberg equilibrium; 4.2. Finite populations, panmictic populations, sexual x clonal; 4.3. How to detect and quantify recombination.			04
05. Genetic drift and variability of populations: 5.1. Finite populations and genetic drift; 5.2. Identity by descent and endogamy; 5.3. How to detect genetic drift.			04
06. Mutation and variability: 6.1. Mutation models; 6.2. Quantification of mutation rates.			04
07. Migration and population structure. 7.1. Migration models; 7.2. Migration and genetic drift; 7.3. How to estimate migration between populations.			04
08. Selection: 8.1. Selection models 8.2. The concept of fitness, 8.3. Selection x (drift, recombination, mutation and gene flow), 8.4. Selection estimates in populations.			04

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UNIVERSIDADE
FEDERAL DE
VIÇOSA

COURSE PROGRAM (continued)

N^o

SHEET:

INITIALS:

COURSE:

POPULATION BIOLOGY OF PLANT PATHOGENS

CODE:

FIP 680

UNITS AND TOPICS	<input type="checkbox"/> LECTURES	LABORATORY SESSIONS	NUMBER OF HOURS PER WEEK
01. Critical analysis of scientific articles – exercise.			04
02. Quantification of genetic diversity using R (RStudio) and DNAsp			02
03. Recombination detection and quantification methods			04
04. Genetic drift			04
05. Quantitative methods to estimate mutation			04
06. Quantitative methods to estimate migration rates			04
07. Detecting and quantifying selection			04
08. Coalescent-based methods			04

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UNIVERSIDADE
FEDERAL DE
VIÇOSA

BIBLIOGRAPHIC
REFERENCES

Nº

SHEET:

INITIALS:

CODE:

PHYTOPATHOGENIC BACTERIA

CODE:

FIP 640

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UNIVERSIDADE
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COURSE PROGRAM

Nº

SHEET:

INITIALS:

IDENTIFICATION

COURSE: HOST-PATHOGEN INTERACTIONS (Interação Patógeno-Hospedeiro)		CODE: FIP 701	
DEPARTMENT: PLANT PATHOLOGY (Fitopatologia)		ADMINISTRATIVE UNIT CODE: CCA	
DURATION IN WEEKS 15	NUMBER OF HOURS PER WEEK		TOTAL NUMBER OF HOURS 60
LECTURES: 04	LABORATORIES: 00	TOTAL: 04	
CREDIT NUMBER: 04	SEMESTER: 1		
PRE-REQUISITES		PRE OR CO-REQUISITES	

CONTENT

Importance of studying host-pathogen interactions in plant pathology. The plant cell. Pathogenesis events. Enzymes. Toxins. Physiological changes in the plant during the infection. Resistance mechanisms. Induction of resistance.

OFFERED TO THE FOLLOWING PROGRAMS (ONLY FOR UNDERGRADUATE LEVEL COURSES)

1.	()	7.	()
2.	()	8.	()
3.	()	9.	()
4.	()	10.	()
5.	()	11.	()
6.	()	12.	()

(OB)= OBLIGATORY

(OP)= OPTIONAL

Nº DA ATA DA REUNIÃO:

DATA DE APROVAÇÃO:

____/____/____

____/____/____

CHEFE DO DEPARTAMENTO

ALTERAÇÃO

APROVADA PELO

CTP

CTG

Nº DA ATA DA REUNIÃO

DATA DE APROVAÇÃO:

____/____/____

____/____/____

PRESIDENTE DO CONSELHO

APROVAÇÃO

DA COORDENAÇÃO DE ENSINO, PESQUISA E EXTENSÃO - CEPE

Nº DA ATA DA REUNIÃO

DATA DE APROVAÇÃO

____/____/____

____/____/____

SECRETÁRIO DE ÓRGÃOS COLEGIADOS



UNIVERSIDADE
FEDERAL DE
VIÇOSA

COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

HOST-PATHOGEN INTERACTIONS

CODE:

FIP 701

UNITS AND TOPICS

LECTURES

LABORATORY
SESSIONS

NUMBER OF
HOURS PER WEEK

01. Importance of studying host-pathogen interactions in plant pathology		1
02. The plant cell		1
03. Pathogenesis events: 3.1. Infection process: adhesion, germination, pre-penetration, penetration; 3.2. Molecular events during the recognition process of the host by the pathogen and of the pathogen by the host; 3.3. Signal cascades during host-pathogen interactions; 3.4. Host colonization and nutrient transfer.		14
04. Enzymes		6
05. Toxins		6
06. Physiological changes in the plant during the infection: 6.1. Transpiration and respiration; 6.2. Photosynthesis; 6.3. Translocation, permeability and metabolism of carbohydrates and other nutrients; 6.4. Enzyme activity and concentration of proteins, nucleic acids and growth regulators.		5
07. Resistance mechanisms: 7.1. Structural and/or pre-formed resistance mechanisms; 7.2. Biochemical and/or post-formed resistance mechanisms.		15
08. Induction of resistance 8.1. Induced systemic resistance 8.2. Acquired systemic resistance		12

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UNIVERSIDADE
FEDERAL DE
VIÇOSA

COURSE PROGRAM (continued)

Nº

SHEET:

INITIALS:

COURSE:

HOST-PATHOGEN INTERACTIONS

CODE:

FIP 701

UNITS AND TOPICS



LECTURES



LABORATORY
SESSIONS

NUMBER OF HOURS PER
WEEK

No lab sessions

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VIÇOSA

REFERENCES

Nº

SHEET:

INITIALS:

CODE:

HOST-PATHOGEN INTERACTIONS

CODE:

FIP 701

Daniel, M.; Purkayastha, R.P. (eds.). Handbook of Phytoalexin - Metabolism and Action. Marcel Dekker, Inc. New York, 615 p., 1995.

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Loon, L.C.; Kader, J.C.; Delseny, M. (eds.). Plant Innate Immunity. Advances in Botanical Research, vol. 51, Academic Press, 1st Edition, 400 p., 2009.

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Vidhyasekaran, P. Fungal Pathogenesis in Plants and Crops - Molecular Biology and Host Defense Mechanisms. Marcel Dekker Inc., New York, 553 p., 1997.

Walters, D.; Newton, A.; Lyon, G. (eds.). Induced resistance for plant defence: a sustainable approach to crop protection. Blackwell Publishing, 258 p., 2007.

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DEPARTMENT CHAIR

APPENDIX 3

Guidelines for the PhD degree at UFV (in English).

UNIVERSIDADE FEDERAL DE VIÇOSA – UFV
OFFICE OF RESEARCH AND OF THE GRADUATE SCHOOL

Disclaimer: This is an edited version of the original document. Operational details were removed for the sake of brevity. Nevertheless, the original Portuguese and English versions can be obtained upon request (pr.ppg@ufv.br)

ACADEMIC REQUIREMENTS
GRADUATE PROGRAMS

ACADEMIC YEAR

The academic year at the Universidade Federal de Viçosa comprises two regular terms of academic activity and a special summer term.

1. Each regular term lasts a minimum of 100 (one hundred) days of school work, excluding the time reserved for exams.
2. The special summer term lasts at least 45 (forty-five) days.

COURSES AND PROGRAMS OFFERED

The University offers the following courses and programs:

1. Regular:

1.1. **UNDERGRADUATE PROGRAMS:** courses that provide university education and enable students to obtain academic degrees and professional practice. They are open to holders of certificate of completion of high school or equivalent, who have been approved in the UFV entrance examination, or bearers of a higher education diploma.

1.2. – “*Stricto sensu*” (Master’s and Doctorate degree) and “*Lato sensu*” (Specialization/MBA)

GRADUATE PROGRAMS: programs and courses designed to candidates with college degree that meet the conditions prescribed for each case.

2. Special Courses:

2.1. **EXTENSION COURSES:** courses which are open to any applicant, although not at higher education level, aiming to spread knowledge and work techniques.

2.2. **SEQUENTIAL COURSES:** open to candidates who have graduated from high school or equivalent course and meet the requirements of the institution. These courses can be in-classroom, semi-in-classroom or distance based.

GENERAL RULES FOR *STRICTO SENSU* GRADUATE PROGRAMS

OBJECTIVES

Art. 1 – The *Stricto Sensu* Graduate Programs offered by the Universidade Federal de Viçosa are intended to provide broad and deep scientific and cultural background to students, through the development of research and innovation ability, in different branches of knowledge.

STRICTO SENSU GRADUATE PROGRAMS

Art. 2 – The *Stricto Sensu* Graduate Programs comprise two levels of training, Master's and Doctoral degrees, which will confer the titles of *Magister Scientiae* (M.Sc.) and *Doctor Scientiae* (D.Sc), respectively.

CHAPTER I

GENERAL ORGANIZATION

Art. 3 - The minimum duration of the Master's and Doctoral Programs is one (1) and two (2) years and maximum of three (3) and 5 (five) years, respectively, counted from the date of admission.

Art. 4 - In addition to other requirements, students must take courses in the area of concentration (core group of courses defined by each Program) or in other knowledge fields that are related to the Program. The related fields are defined by each Program.

§ 1 – Courses of the area of concentration are those that characterize the field of study of the program, while disciplines of the related field are those that do not belong to this field, but are considered desirable or necessary to complete the training of students.

§ 2 - The disciplines in the area of concentration should total at least 50% (fifty percent) of the number of credits required.

...

CHAPTER II

TECHNICAL BOARD OF GRADUATE PROGRAMS

Art. 6 - The Council of Graduate Programs is in charge of the general teaching coordination of the Graduate Programs.

...

Art. 9 - The Council of Graduate Programs is in charge of the following activities:

a) preparation of the general schedule of the activities of the graduate programs, which will be submitted to approval by the Board of Teaching, Research and Extension;

- b) elaboration of the Statute of Graduate Programs for approval by the Board of Teaching, Research and Extension, and edition of supplementary instructions;
- c) establishment of the minimum requirements of the Graduate Programs, after the general standards established by law are met;
- d) approval of the areas of concentration of Graduate Programs and the requirements for each of them;
- e) accreditation of professionals who will work in the Graduate Programs;
- f) approval of the names of candidates for graduate titles;
- g) approval of the admission of students indicated by the respective coordinators of Graduate Programs;
- h) approval of the number of vacancies for Graduate Programs;
- i) promote the development of graduate activities;
- j) make adjustments, agreements or arrangements, either academic or financial, for the support, cooperation and development of Graduate Programs;
- k) evaluation of the operation and performance of Graduate Programs; and
- l) performance of actions attributed to an informative and consultative organ of the Board of Teaching, Research and Extension, for graduate studies.

CHAPTER III

CREATION OF THE PROGRAMS

...

CHAPTER IV

COORDINATION OF THE PROGRAMS

Art. 13 - The teaching and scientific coordination of each Graduate Program, under the administration of the respective departments, will be exercised by a Coordinating Committee consisting of:

- a) one (1) coordinator, as its chairman, appointed by the head of the department and appointed by the President of the University, whose name is included in a triple list organized by his/her peers;
- b) three (3) professors elected by their peers; and
- c) one (1) representative of the students in the Program, elected by his/her peers, and respective alternate.

...

Art. 19 - The Coordinating Committee is responsible for:

- a) defining the disciplines of the area of concentration and related field, and establishing if they will be mandatory or optional (electives), which will be approved by competent authorities;
- b) establishing specific requirements of the Program and submitting them to the Council of Graduate Programs;
- c) appointing professors to the position of advisors of the Program;

- d) organizing instructions, standards, plans or projects related to the Program and submitting them to the analysis of competent bodies;
- e) proposing to the competent departments the creation of the disciplines required for the Program;
- f) opining about the analytical program of the disciplines of the area of concentration or mandatory, suggesting modifications, when necessary, to achieve the objectives of the Program;
- g) selecting qualified candidates for admission into the program;
- h) establishing standards for the operation of Seminars;
- i) proposing or opining about the exclusion of students from the Program due to academic or disciplinary reasons;
- j) nominating candidates for scholarship granting;
- l) assessing or proposing agreements or cooperative arrangements, either academic or financial, for the support or development of the Program;
- m) receiving, assessing, resolving or referring, as appropriate, suggestions, complaints, representations or resources, from students or professors, related to any scientific-educational issue involving the Program; and
- n) taking the appropriate actions attributed to an information and consulting organ related to the Technical Board of Graduate Studies.

Art. 20 - Coordinators have the following specific duties:

...

CHAPTER V

ADMISSION TO THE PROGRAMS

Art. 21 - Candidates who have graduated from a higher education institution may be admitted at Graduate Programs, since their curricula contain disciplines relevant to the intended Program.

§ 1 - In the case of undergraduate curricula without sufficient basis for the program claimed, students should take disciplines offered at undergraduate level, at the discretion of the Coordinator of the Program.

§ 2 – Candidates that have been disconnected from any Graduate Program of the Universidade Federal de Viçosa, due to low academic performance, abandonment or lapse of time cannot be admitted to the same level of graduate program, for the periods of 2 (two) or 4 (four) years for master's and doctoral degrees, respectively.

§ 3 - Candidates who have been disconnected from any Graduate Program of the Universidade Federal de Viçosa due to disciplinary reasons cannot be admitted to the Graduate Program.

§ 4 - The Registrar's Office is in charge of ensuring compliance with the restrictions set out in paragraphs 2 and 3, by means of their records of students disconnected from graduate programs of the Universidade Federal de Viçosa.

22 – A Master's degree will be required for admission in the doctoral program.

§ - Sole paragraph - On a reasoned proposal by the Coordinating Committee, the Council of Graduate Studies may waive this requirement.

Art. 23 – Candidates must present the following documents for application:

- a) Enrollment form (two copies);
- b) a certified copy of the certificate or statement of completion of undergraduate degree (for doctoral program, the certificate of conclusion of the master's degree program is also required);
- c) a certified copy of the academic transcript of the undergraduate program explaining the evaluation system (the academic transcript of the master's degree program is also required for doctoral degree);
- d) Curriculum vitae, one copy (with proof);
- e) One 3 x 4 photograph;
- f) Copy of Certificate of Birth or Marriage;
- g) Copy of the ID card;
- h) Copy of the proof of military service; (Brazilian citizens)
- i) Copy of Voter Registration; (Brazilian citizens)
- j) Copy of the CPF;
- k) three letters of reference, at the discretion of the Program; and
- l) proof of payment of enrollment fee, which shall be stipulated by the Universidade Federal de Viçosa.

§ - Sole paragraph - If applicants have only the certificate of course completion, upon enrollment, they will be obliged to present certified copy of their diploma to the Registrar's Office.

Art. 24 - The date of submission of application for enrollment shall be divulged in the Academic Calendar of the Universidade Federal de Viçosa.

Art. 25 - Besides the analysis of the documents required in the application process, the Coordinating Committees may adopt other criteria they deem appropriate for the selection of candidates.

Art. 26 - The selection will be valid only for enrollment in the school year for which it was approved or the subsequent period, after consultation with the Program Coordination.

27 - The coordinators will inform the candidates of the result of the selection.

CHAPTER VI

ENROLLMENT

Art. 28 - Every semester, on the date fixed by the School Calendar, all students must apply for renewal of enrollment.

...

Art. 30 - Failure to renew enrollment in due season will mean abandonment of the Program and automatic disconnection, if, on the date specified in the academic calendar, students do not require from the School Board of Enrollment a special leave, which will be valid for the respective semester and granted one (1) time.

Art. 31 - When authorized to conduct activities outside the institution, students are dismissed from enrollment renewal while their period of leave lasts.

Art. 32 - Students may request cancellation of enrollment in one or more disciplines, if their advisors agree.

§ - Cancellation of enrollment will only be granted once for each discipline.

...

CHAPTER VII

TEACHING REGIME

Art. 34 - Regular teaching will be organized in the form of courses, with lectures, seminars, directed studies, practical classes and other teaching methods.

§ Sole paragraph - The disciplines will be classified into three levels, codes 600, 700 and 800, according to the content and focus of their respective analytical programs (syllabus).

Art. 35 - Seminars, Special Problems, Special Topics, Research and Internship in Teaching will be encoded as 700-level disciplines.

§ - Sole paragraph- Seminars should be specific to each program.

Art. 36 – Credit is the basic unit for assessing the intensity and duration of disciplines. 1 (one) credit is equivalent to fifteen (15) hours of lecture or thirty (30) hours of practical classes.

Art. 37 – Academic performance examination will be carried out through practical work, oral tests, written tests and final exam, at the discretion of professors. Specifically for the discipline Teaching Internship, performance will be evaluated by the coordinator of the discipline and the professors that tutored students in the execution of the planned activities.

Art. 38 - The system used for assessing disciplines will be concept-grade expressed by a letter, according to the following equivalence of relative performance:

CONCEPT-GRADE SYMBOLS	PERFORMANCE PERCENTAGE
-----------------------	------------------------

Excellente A	from 90% to 100%
--------------	------------------

Good B	From 75% to 89%
--------	-----------------

Fair C	From 60% to 74%
--------	-----------------

Failure R	Below 60%
-----------	-----------

Incomplete I	
--------------	--

Cancellation of enrollment in Discipline J	
--	--

Cancellation of Enrollment K	
------------------------------	--

Satisfactory S	
----------------	--

Non-Satisfactory N	
--------------------	--

Ongoing Q	
-----------	--

§ 1 - In the disciplines Special Problems and Internship in Teaching, students may use the maximum of three (3) credits at each level to complete their study plan.

§ 2 - The Analytical Programs of Special Problems and Special Topics and a list with the names of the students approved to attend these disciplines should be forwarded to the Board of School Registration, which will create a class for each specific analytical program, in the same school term.

§ 3 - The discipline Seminar will grant, in each level, 1 (one) or 2 (two) credits, which will not be counted in the performance coefficient, but may be considered to complete the minimum credits required by the program at the discretion of the Coordinating Committee.

§ 4 - The provisional concept I (incomplete) will be attributed to students that discontinue, force majeure, part of their their academic work, and have obtained a performance proportionally sufficient for approval in the evaluations applied. Proof of the hindrances should be given to the professors of the disciplines attended. The concept I (incomplete) will be transformed into R (failure) if the works are not completed and a new concept is not assigned and sent to the Registrar's Office, before the deadline set by the School Calendar.

§ 5 - The concept J (cancellation of enrollment in discipline) refers to the effective cancellation of enrollment.

§ 6 - The concept K (suspension of enrollment) refers to the effective suspension of enrollment.

Article 39 - The requirements that do not give credit or are not counted in the credits provided for in Art. 83 or Art. 84 of this regiment will be evaluated by the following concepts:

Q - Ongoing;

S - Satisfactory; and

N - Non-Satisfactory.

Art. 40 - At the end of each term, the performance coefficient is calculated, based on the sum of the number of credits in each discipline, which will be multiplied by 3, 2, 1 and 0, assigned to the concepts A, B, C and R, respectively, and divided by the total number of credits of the respective disciplines.

§ 1 - To calculate the accumulated performance coefficient, the value will be represented with a decimal point, which will be rounded to the next higher figure if the second decimal point is greater than or equal to 5 (five).

§ 2 - The performance coefficient is achieved by dividing the sum of the points obtained by the sum of credits of the disciplines taken in each term, which have received concepts A, B, C or R.

§ 3 - The accumulated performance coefficient is obtained for all terms students were enrolled.

Art. 41 - Students that obtain concept R in a discipline should attend it again. The last concept obtained should be the final result, with the exception of the disciplines Special Problems and Special Topics.

Art. 42 - The disciplines whose concepts are R, I, J or K shall not be used in the counting of the credits required in the program.

Art. 43 - The title will only be awarded to students who met the other requirements and were approved in all disciplines listed in their academic transcript, excepting the disciplines Special Problems and Special Topics.

Art. 44 - For all purposes under this Statute, students that do not achieve frequency of at least 75% in the teaching activities scheduled will fail.

Art. 45 - Students that fall into one or more of the conditions specified below will be disconnected from the program, except if they are enrolled in disciplines which are not included in the calculation of the performance coefficient:

- a) obtaining, in their first term, performance coefficient below 1.3 (one and three tenths);
- b) obtaining, in their second term, accumulated performance less than 1.7 (one and seven tenths);
- c) obtaining, in their second term, accumulated performance coefficient less than 2.0 (two), having completed the minimum number of credits required by the program;
- d) obtaining, in their third term and in the subsequent terms, an accumulated performance coefficient of less than 2.0 (two);
- e) obtaining grade R (failure) in any discipline for the second time, either in undergraduate or graduate program, except in the case of specific disciplines, to meet the requirements of foreign language;
- f) obtaining two concept-grades N (Non-Satisfactory), either consecutive or not, in Research; and
- g) failing to complete all requirements of the program within the prescribed period.

§ - Sole paragraph - The concept "R" will be counted in the calculation of the performance coefficient, while another concept is not attributed to the discipline taken twice.

CHAPTER VIII

ADVICE TO STUDENTS

Art. 46 - The didactic orientation to students will be exercised by advisors or, alternatively, by co-advisors.

§ - Sole paragraph - Advisors will be appointed by the Coordinating Committee, subject to the provisions of the Internal Statute of the program.

Art. 47 - Research for writing dissertation or thesis will be supervised individually by an advisor or, optionally, by an Advisory Committee formed by an advisor and co-advisor(s).

Art. 48 - Advisors are specifically in charge of:

- a) organizing students' study plan;
- b) proposing the names of co-advisors who will take part in the Advisory Committee;
- c) conducting research, object of the dissertation or thesis of students, and assigning the concept obtained in assessments;
- d) promoting regular meetings with the participation of students and the Advisory Committee;
- e) approving the application for renewal of enrollment as well as requests for replacement, cancellation and enrollment for disciplines and suspension of enrollment;
- f) assisting students in issues related to current academic standards and processes;
- g) chairing the Board of Defense of Dissertation or Thesis or the Board of the Qualification Examination.

Art. 49 - The average number of students under orientation of a professor cannot exceed (6), for each Graduate Program.

CHAPTER IX

STUDY PLAN

Art. 50 - The Study Plan will necessarily contain the courses of the area of concentration and related field, as well as seminars, foreign language and area of research for the dissertation or thesis.

§ 1 - The courses attended out of the Universidade Federal de Viçosa will be classified as belonging to the area of concentration, related field or out of the program, at the discretion of the Coordinating Committee of the Program.

§ 2 - Enrollment in the course "Internship in Teaching" can only be made by students enrolled in the Graduate Program of the Universidade Federal de Viçosa, subject to availability of vacancy, to be defined by the respective department, and consent from students' advisors and the coordinator of the discipline

Art. 51 - After being approved by advisors and students, the Study Plan will be analyzed by the Coordinator of the Program and the Chairman of the Council of Graduate Studies, by the end of the first term attended by students at the University.

§ 1 - Without an approved Study Plan, students cannot be enrolled in the second term.

§ 2 - The Study Plan may be changed by suggestion from advisors.

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CHAPTER X

FOREIGN LANGUAGE REQUIREMENT

Art. 53 - Students will have three alternatives to meet the foreign language requirement:

- a) approval in a foreign language proficiency examination applied by the Department of Languages or the Coordination of Graduate Program;
- b) approval in disciplines recognized by the Technical Board of Graduate Studies as sufficient; and
- c) approval in standardized foreign language examinations.

Art. 54 - The proficiency examinations, prepared by the Department of Languages, will be applied on dates mutually agreed with the School Calendar.

Art. 55 - The concept "N" obtained in a foreign language discipline will be automatically replaced by the concept "S" when students are successful in a foreign language proficiency examination.

CHAPTER XI

USE OF CREDITS

Art. 56 - credits of course taken at the Universidade Federal de Viçosa may be used, provided that they are consistent with the content of the program in which students are enrolled.

§ - Sole paragraph - Credits obtained in disciplines specific to the *Lato Sensu* program cannot be used.

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CHAPTER XII

TRANSFER OF CREDITS OBTAINED OUTSIDE THE UFV

Art. 62 - The Universidade Federal de Viçosa may accept the transfer of credits obtained at other education institutions, for disciplines consistent with the Program to which students are bound, up to 50% (fifty percent) of the number required in Art. 83 or 84 of this Statute.

§ 1 - Only disciplines with concept A and B can be transferred.

§ 2 - Credits obtained in disciplines specific to Lato Sensu Programs cannot be transferred.

§ 3 - Credits obtained in disciplines taken at double level condition, as undergraduate students, cannot be transferred.

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Art. 65 – Credit transfer must be recommended by the Coordinating Committee of the Program and approved by the Council of Graduate Studies.

CHAPTER XIII

QUALIFYING EXAM

Art. 67 - Every candidate for the title of *Doctor Scientiae* should undergo a qualifying examination.

§ - The qualifying examination aims to assess whether students have the scientific and cultural training expected for a contender for the title of *Doctor Scientiae*.

Art. 68 - Only students who have obtained all credits demanded in their study plan can take the qualifying examination.

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Art. 70 - The Examination Board shall be composed of five (5) members who hold Doctoral degree.

Sole Paragraph - The Board shall have five (5) full members and two (2) alternates.

Art. 72 - The qualifying examination will consist of two stages, one written and another oral, and will address areas of knowledge relevant to students' training.

Art. 73 – Students who obtain the unanimous positive indication from the members of the Examining Board shall be considered approved.

74 - The test results should be reported to the Dean of Research and Graduate Studies, in proper form, within ten (10) days after its completion.

Art. 75 – Students who failed the qualifying examination will be given another chance, after a maximum of six (6) months from the date of realization.

CHAPTER XIV

THE RESEARCH PROJECT

Art. 76 - Every graduate student should prepare a compulsory research project for the development of their dissertation or thesis.

Art. 77 - The research project shall be prepared under the supervision of the Advisory Committee, approved by the head of the department and the director of the Center for Sciences and registered in the office of the Dean of Research and Graduate Studies.

Art. 78 - The research projects of students applying for the title of *Magister Scientiae* or *Doctor Scientiae* will be delivered mandatorily for registration in the office of the Dean of Research and Graduate studies up to the last day of the disclosure of the concepts for the third and fifth terms, established in the School Calendar, respectively.

§ 1 - All students applying to the titles of *Magister Scientiae* or *Doctor Scientiae* will be required to enroll in the discipline Research, after the payment of due fees, in the second and fourth renewal of enrollment, respectively.

§ 2 - If students fail to meet the deadlines established in the caput of this article, they will be given concept 'N' in Research.

CHAPTER XV

DISSERTATION OR THESIS

Art. 79 - All graduate students who are candidates for the title of *Magister Scientiae* or *Doctor Scientiae* shall prepare and defend a dissertation or thesis, respectively, and be approved in it.

§ 1 - The dissertation or thesis may be written in English, Portuguese or Spanish, at the discretion of the Advisory Committee.

§ 2 - Candidates, the Advisory Committee and the Examining Board are in charge of the formatting, language and content of the dissertation or thesis.

§ 3 - The dissertation or thesis, under the supervision of the Advisory Committee, should be based on original research work that really contributes to scientific knowledge on the subject.

§ 4 - The results of the research carried out for obtaining the Master's degree or Doctoral degree are subject to current laws, rules or resolutions related to intellectual property of the Universidade Federal de Viçosa.

Art. 80 - The dissertation or thesis will be defended before a board formed by holders of doctoral degree, under the chairmanship of the respective advisors.

§ 1 - The dissertation board will include at least 3 (three) full members and 2 (two) alternates.

§ 2 - The Board of thesis will be appointed with at least five (5) members and two (2) alternates.

§ 3 - The members of the Board, proposed by the Advisory Committee and indicated by the Coordinator of the Program, will be appointed by the President of the Technical Board of Graduate Studies.

§ 4 - At least 1 (one) of the full members of the dissertation board should not belong to the Program or to students' Advisory Committee.

§ 5 - At least 1 (one) of the full members of the thesis board should not belong to the Program and 1 (one) member should not belong to the Universidade Federal de Viçosa, and none of these two should belong to the Advisory Committee of the respective student.

§ 6 – After the designation of the board of thesis or dissertation defense, a minimum period of 10 (ten) days shall be observed for the defense. Advisors should set the date, time and place of the defense and inform the members of the board and students.

§ 7 - The defense of the dissertation or thesis should also include assessment of the knowledge acquired by the applicant during the development of the program.

§ 8 - Candidates receiving the unanimous indication from the members of the board will be approved.

§ 9 – Candidates disapproved can be submitted to another defense, at the discretion of the Examining Board.

§ 10 - The result of the defense should be reported to the Dean of Research and Graduate Studies, in proper form, within 10 (ten) days after its completion.

§ 11 – If advisors are unable to attend, by force majeure, the Coordinating Committee of the Program will indicate one of the members of the Examining Board to preside, as alternate, with knowledge of advisors.

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CHAPTER XVI

ACADEMIC TITLE

Art. 83 - The title of *Magister Scientiae* will be granted to students that:

- a) complete at least 24 (twenty-four) credits in disciplines of the Graduate Program to which they are bound, in accordance with the provisions of this Statute, with an accumulated performance coefficient equal to or higher than 2 (two);
- b) meet the foreign language requirements;
- c) meet the requirements of the discipline Seminar; and
- d) submit the text of their duly approved dissertation and copies of its final version to the Dean of Research and Graduate Studies.

Art. 84 - The title of *Doctor Scientiae* will be granted to students that:

- a) complete at least 24 (twenty-four) credits, if they have a title of *Master's* or *Magister Scientiae*, or 48 (forty-eight) credits, if they have only a bachelor's degree in disciplines of the Graduate Program to which they are bound, according to the provisions of this Statute, with accumulated performance coefficients equal to or higher than 2 (two);
- b) meet the foreign language requirements;
- c) meet the requirements of the discipline Seminar; and
- d) submit the text of the duly approved thesis and copies of its final version to the Dean of Research and Graduate Studies.

Art. 85 - The Technical Board of Graduate Studies or the Coordinating Commission may establish other requirements for the Program, besides those already specified.

CHAPTER XVII

THE ISSUANCE OF A CERTIFICATE OF SPECIALIZATION FOR MASTER'S DEGREE STUDENTS

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CHAPTER XVIII

CO-TUTELAGE AND GRADUATE DUAL PROGRAMS IN PARTNERSHIP WITH FOREIGN INSTITUTIONS OF HIGHER EDUCATION

Art. 90 - Co-tutelage is understood as academic cooperation in *stricto sensu* graduate studies agreed between the UFV and foreign institutions, in which students in training receive shared guidance of faculty members of the institutions involved.

§ 1 Definitions: a) dual/joint title - two or more degrees conferred by two or more institutions for the same study program developed separately and implemented in each of the participating institutions; b) joint degree - degree jointly awarded by institutions or degree conferred by each institution participating of a program developed and recognized by the institutions concerned.

§ 2 For each thesis and/or dissertation developed in co-tutelage, a specific agreement should be signed between UFV and the foreign institution. This agreement must be approved by the Technical Board of Graduate Studies.

§ 3 - The agreement for co-tutelage will be signed between the higher courts of the institutions, with agreement of the coordinators of the graduate programs involved.

§ 4 - International graduate dual programs, in association with foreign institutions recognized by CAPES, are considered as co-tutelage.

Art. 91 - Students developing thesis and/or dissertation under co-tutelage agreement will graduate from the partner institutions.

§ 1 - The board of examiners of the defense of thesis/dissertation must have at least one representative from each institution.

§ 2 - The session for defense of thesis/dissertation will not require the presence of the assessors and students in the same location. Technological resources can be used to communicate in real time.

§ 3 - Theses/dissertations can be written and defended in the languages mentioned in Art. 79, § 10, as defined in the agreement of co-tutelage.

Art. 92 - The protection of the theme of the thesis/dissertation, as well as publication, exploitation and protection of research results which are common to both institutions should be ensured in accordance with the provisions of the cooperation agreement signed between the parties and specific legislation of each country involved in the co-tutelage agreement.

Art. 93 - Applicants must comply with all requirements of the agreement between the institutions to obtain the title in co-tutelage.

CHAPTER XIX

OFFSHORE GRADUATE STUDIES

Article 94 - The UFV will offer graduate programs abroad to other institutions through agreements. The degree conferred to these programs, either master's or doctoral degree, will be in offshore degree mode.

§ 1 - The offshore degree mode will be held in co-tutelage. In this case, the provisions of Chapter XVIII are applied.

TITLE III

NON-BOUND STUDENTS

Art. 95 - The Universidade Federal de Viçosa may accept non-bound students who are interested in improving their knowledge without pursuing, however, a graduate title.

Art. 96 - Applicants must submit the following documents upon enrollment:

- a) due enrollment form (two copies);
- b) a certified copy of the diploma or statement of completion of undergraduate degree;
- c) a certified copy of the academic transcript of the undergraduate program, declaring the evaluation system adopted;
- d) a 3 x 4 photo;
- e) Copy of Birth or Marriage Certificate;
- f) copy of Identification Card;
- g) copy of proof of Military Service;
- h) copy of Voter Registration Card; and
- i) copy of CPF.

§ - Candidates must specify the disciplines they want to attend, in the application form.

Art. 97 - The application period will close thirty (30) days prior to the offer of the discipline (s) and must be approved by the coordinator of each discipline and the head of each department that offers these disciplines.

§ 1 - The application shall be made in each department that offer disciplines and shall meet the criteria established above.

§ 2 - Non-bound students may enroll in up to 3 (three) disciplines per regular term, in the maximum of two (2) terms.

Art. 98 - Admission of non-bound students will be valid for one semester.

§ 1 - The enrollment fee will correspond to the value of the enrollment of students who are starting the Graduate Program, according to the rates set by the Universidade Federal de Viçosa.

§ 2 - The granting of new enrollment as non-bound student will be conditional on the approval in discipline (s) previously attended

Art. 99 - Non-bound students may request cancellation of enrollment in disciplines, respecting the dates specified in the academic calendar.

TITLE IV

STUDENTS ENROLLED IN OTHER INSTITUTIONS (BOUND STUDENTS)

Art. 100 - The Universidade Federal de Viçosa may accept graduate students regularly enrolled in stricto sensu Graduate Programs from other Higher Education Institutions who wish to take disciplines of the UFV stricto sensu Graduate Programs.

Art. 101 - Upon enrollment, applicants must submit to the Dean of Research and Graduate Studies the following documents:

- a) certified copy of the academic transcript of the Graduate Program in which they are enrolled;
- b) request for enrolling in the discipline (s) they wish to attend;
- c) request from the institution they are bound to.

Art. 102 - The period for application will terminate thirty (30) days before the start of the classes of the discipline(s) required. The application for enrollment must be analyzed and approved by the Coordination of the respective Graduate Program of the Universidade Federal de Viçosa and by the coordinator of each discipline and the head of each department that offers these disciplines.

§ - Sole paragraph - Bound students may attend a maximum of twelve (12) credits.

Art. 103 - Admission of bound students will be valid for one semester.

§ 1 - The enrollment fee will be equivalent to the rate for renewal of enrollment in Graduate Programs, as established by the Universidade Federal de Viçosa.

§ 2 - The granting of new enrollment as bound student will be conditioned to approval (s) in the discipline (s) previously taken.

Art. 104 - Bound students may request cancellation of enrollment in one or more disciplines, within the dates specified in the academic calendar.

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TITLE VI

ACCREDITATION OF PROFESSORS AND RESEARCHERS

Art. 107 – UFV higher education professors holding a doctorate degree will be accredited for the exercise of graduate activities.

§ Sole paragraph – graduate activities are understood as teaching, research, co-advising and advising.

Art. 108 – The exercise of orientation activities in a graduate program will require the accreditation of faculty members specifically for the program.

§ 1 - The criteria for accreditation of professors as advisors will be established by the respective Coordinating Committee and approved at a regular meeting of the Technical Board of Graduate Studies.

§ 2 - The Coordinating Committee, considering the criteria in § 1, indicates the accreditation of the professors that request it to the Dean of Research and Graduate Studies.

§ 3 - At intervals of no more than 5 (five) years, professors will forward to the Coordinating Commission their request for re-accreditation as advisors in the program. Based on the criteria established in § 1, the Coordinating Committee shall decide whether the professors who require re-accreditation will be re-accredited or not by the Dean of Research and Graduate Studies.

§ 4 - If a professor is not re-accredited as advisor, he/she must complete his/her advisory work still in progress.

Art. 109 – High school teachers and technicians from the Universidade Federal de Viçosa who hold a doctoral degree may be accredited as co-advisors and advisors.

Art. 110 - The accreditation of researchers or faculty members from other institutions that hold doctoral degree should be carried to allow them to become co-advisors and advisors specifically of master's and doctorate students.

§ - The accreditation of professors/researchers outside the Universidade Federal de Viçosa will not imply employment of any nature by the University, nor entail any liability on its part.

Article 111 - The request for accreditation must be submitted in the form of process, to the Dean of Research and Graduate Studies, by the department to which the respective professor/technician belongs, after analysis by the Coordinating Commission of the Program, where the professor/technician will perform most activities. Requests from researchers or professors from other institutions will be submitted only by the Coordinating Committee of the Program.

§ - Sole Paragraph - The process should include reasoned justification, curriculum of the candidates, proof of the title achieved and authorization from their immediate boss, for researchers or professors from other institutions.

Article 112 - The chairman of the Technical Board of Graduate Studies is responsible for probating the process and authorizing the enrollment of advisor professors; and the Technical Board of Graduate Studies is responsible for approving the accreditation of professors who do not teach in higher education programs and technicians of the Universidade Federal de Viçosa, as well as professors and technicians from other institutions.

TITLE VII

FINAL PROVISIONS

Art. 113 - The Graduate Programs at the Universidade Federal de Viçosa shall be governed by the provisions of this regiment, without prejudice to specific provisions of the Statute, General Rules of the University and other standards, Acts and Resolutions established by the competent Governing Bodies.

Art. 114 - The provisions of this regiment for Postgraduate studies may be modified by the competent authorities, where necessary, even during the school year.

Art. 115 - Contrary provisions are therefore revoked, in particular, Resolution No. 1/2006-CEPE.

Art. 116 - These Rules shall enter into force on the date of their publication.

SPECIAL SUMMER PERIOD

The Special Summer Period, which lasts for a minimum of 45 (forty-five) days, takes place in the months of January and February and offers disciplines at undergraduate and graduate levels. Enrollment is open to students admitted to regular graduate programs, non-bound students, or students enrolled in other higher education institution.

COEFFICIENT OF PERFORMANCE

1. COEFFICIENT OF PERFORMANCE (CR) is achieved by dividing the sum of the points obtained during a term by the sum of credits of the disciplines in which students are enrolled. For example:

Calculation of the Coefficient of Performance

Disciplines	Credits	Concepts	Values
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Points

CTP 710 4 C	1 4		
CTP 600 3 B	2 6		

CTP 602 3 R 0 0

CTP 634 4 C 1 4

CTP 671 3 A 3 9

Sum 17 - - 23

Coefficient of Performance (CR) $23:17 = 1,4$

2. ACCUMULATED COEFFICIENT OF PERFORMANCE is achieved by dividing the sum of all points already obtained, from the first regular period, by the sum of all credits in disciplines in which a student is effectively enrolled.

* Rules altered by Resolutions 05/2007, 03/2008, 05/2008, 03/2009, 10/2010, 09/2011 and 08/2012 of the CEPE.

APPENDIX 4

Letter from the Director (Coordinator) of Graduate Studies at UFV.



**UNIVERSIDADE FEDERAL DE VIÇOSA
CENTRO DE CIÊNCIAS AGRÁRIAS
DEPARTAMENTO DE FITOPATOLOGIA**

Viçosa, August 01 2014

Dear Prof. Lisa J. Vaillancourt:

I would like to inform you that the U.S. graduate students will take their tests and write their papers in English when taking the laboratory courses of Mycology, Bacteriology, Nematology and Virology regarding the Dual Degree Program to be celebrated between our Plant Pathology Program at Viçosa Federal University, Brazil, with the Plant Pathology Department at University of Kentucky.

Best Regards,

Prof. Fabrício de Ávila Rodrigues
Graduate Coordinator of the Plant Pathology
Program at Viçosa Federal University

Processo nº. 008353/2001

Termo Aditivo nº. 01 ao Convênio nº. 002/2013

ADDITIONAL TERM OF AGREEMENT

**STUDENT EXCHANGE BETWEEN
FEDERAL UNIVERSITY OF VIÇOSA
AND
UNIVERSITY OF KENTUCKY**

SELECTION OF PARTICIPANTS:

The selection procedure by which reciprocal exchange candidates are nominated is the responsibility of the sending university. The candidates may be either undergraduate or graduate students. The number of students sent by each university, each year, will be up to ten, and reciprocity will be based on student credit hours.

Each institution reserves the right to require candidates to present the necessary documentation for selection and to provide the results of any required admission examinations.

Each institution reserves the right to accept or reject a candidate on the basis of regular academic selection criteria and to assign each student appropriate status at the time of admission. It is also understood that certain candidates may be rejected on account of shortage of faculty, lack of student places or other resources.

Selection of students shall be without regard to race, sex, color, religion, sexual orientation, marital status, national origin, age, or beliefs.

The acceptance of exchanges is conditional on the obtaining the necessary immigration and travel clearance. The receiving university will endeavor to assist students in obtaining the proper documents.

At least three months prior to the planned arrival of students, each university will send to the other full information on the students nominated to fill the allocated places.

TERMO ADITIVO AO CONVÊNIO

**INTERCÂMBIO DE ESTUDANTES ENTRE
A UNIVERSIDADE FEDERAL DE VIÇOSA
E A
UNIVERSIDADE DE KENTUCKY**

SELEÇÃO DOS PARTICIPANTES:

O processo de seleção pelo qual os candidatos ao intercâmbio deverão passar, será de responsabilidade da instituição que está enviando. Os candidatos poderão estar cursando graduação ou pós-graduação. O número de alunos a ser enviado por cada universidade anualmente sera de ate dez, e a reciprocidade será com base no número de horas/créditos.

A cada instituição é reservado o direito de exigir aos candidatos documentação pertinente para a seleção, bem como os resultados obtidos nos testes de seleção,

Cada instituição tem o direito de aceitar ou rejeitar o candidato com base nos critérios normais de rendimento acadêmico, competindo-lhe atribuir ao estudante o status adequado no momento da admissão. Fica, ainda, esclarecido que alguns candidatos poderão não ser aceitos devido ao número reduzido de vagas, à falta de espaço ou de outros recursos.

A seleção de candidatos será sem distinção de raça, sexo, cor, religião, orientação sexual, estado civil, nacionalidade, idade ou crenças.

A aceitação dos candidatos estará condicionada pelas exigências relativas a vistos e autorizações de viagem de acordo com as leis de imigração. A universidade receptora deverá auxiliar os estudantes no processo de obtenção da documentação necessaria.

Pelo menos três meses antes da chegada prevista dos estudantes, cada universidade enviará à outra informações completas sobre os estudantes selecionados para completar



as vagas oferecidas.

ACADEMIC PROGRAM

The University of Kentucky will enroll accepted Federal University of Viçosa exchanges as full-time special non-degree classification students for up to two regular semesters of the academic year, this is for a period of twelve months. Federal University of Viçosa students may enroll in regular University of Kentucky courses for which they have the appropriate prior study and which are adequate to the needs of the Federal University of Viçosa curriculum.

At the end of the academic semester, the University of Kentucky will send to the Federal University of Viçosa a report on the academic achievement of the exchange students. This report will take the form of an official transcript.

The Federal University of Viçosa will enroll accepted University of Kentucky exchanges as full-time special non-degree classification students for up to two regular semesters of the academic year, this is for twelve months. The University of Kentucky students may enroll in regular Viçosa courses for which they have the appropriate prior study and which are adequate to the needs of the University of Kentucky curriculum.

At the end of the academic semester, the Federal University of Viçosa will send to the University of Kentucky a report on the academic achievement of the exchange students. This report will take the form of an official transcript.

STUDENT FINANCES

All students will pay tuition and fees to their home university.

PROGRAMA ACADEMICO

A Universidade de Kentucky irá matricular os estudantes do intercâmbio provenientes da Universidade Federal de Viçosa como estudantes em tempo integral, em caráter especial, não graduados, por até dois semestres letivos, ou seja, por um período de doze meses. Os estudantes da Universidade Federal de Viçosa poderão matricular-se em cursos da Universidade de Kentucky, em matérias para as quais tenham os necessários pré-requisitos e que sejam adequadas ao currículo da Universidade Federal de Viçosa.

No final do semestre acadêmico a Universidade de Kentucky enviará à Universidade Federal de Viçosa um relatório relativo ao aproveitamento acadêmico dos estudantes. Este relatório, terá o formato de um histórico escolar oficial.

A Universidade Federal de Viçosa irá matricular os estudantes do intercâmbio provenientes da Universidade de Kentucky na condição de estudantes em tempo integral, em caráter especial, não graduados, por um período de até dois semestres letivos, ou seja de doze meses. Os estudantes da Universidade de Kentucky poderão se matricular em cursos da Universidade Federal de Viçosa, em matérias para as quais tenham os necessários pré-requisitos e que sejam adequadas ao currículo da Universidade de Kentucky.

No final do semestre acadêmico a Universidade Federal de Viçosa enviará à Universidade de Kentucky um relatório relativo ao aproveitamento acadêmico dos estudantes. Este relatório, terá o formato de um histórico escolar oficial.

TAXAS ESCOLARES

Todos os estudantes deverão pagar as taxas estudantis devidas às suas universidades de origem.



Room and meal costs, travel, health and accident insurance, books and supplies, and incidental expenses are the responsibility of the individual exchange students, except if the receiving university determines otherwise.

The receiving institution will reserve appropriate university housing for each exchange. Arrangements for other than university housing must be negotiated on an individual basis.

The receiving institution will provide to the students, in advance, a list of estimated living expenses. The exchanges will be entitled to the use of all host university facilities on the same basis as home students.

EXCEPTIONS AND AMENDMENTS

For conditions of the exchange not covered by this memorandum of agreement or for problems which may arise during the course of the exchange agreement, both parties agree to refrain from unilateral action and to consult and negotiate mutually agreeable decisions.

Amendments to the agreement may be made at any time by agreement of the parties through the exchange of documents. Such amendments shall be added in the form of appendices.

This agreement is initially for a five-year period, renewable at the end of this period by mutual agreement.

The balance of exchanges will be reviewed annually. As a result of this review, student numbers exchanged in subsequent years will be adjusted based on an expected balance in terms of student credit hours.

If the number of exchanges is not equal for both sides at the end of five years, the agreement will continue until a balance in the

Hospedagem, alimentação, seguro de saúde e de acidentes, livros e material escolar, bem como despesas não programadas são da responsabilidade do estudante, exceto, se a instituição receptora determinar o contrário.

A instituição receptora fará reserva de hospedagem adequada para os alunos do intercâmbio, em residências universitárias. Outro tipo de alojamento deverá ser negociado pelo próprio estudante.

A instituição receptora fornecerá de antemão aos estudantes, uma estimativa de custos. Os estudantes do intercâmbio poderão utilizar todas as instalações da universidade receptora da mesma forma que os estudantes locais.

EXCEÇÕES E OUTRAS CONSIDERAÇÕES

Para situações do intercâmbio não previstas neste acordo, ou problemas que possam surgir quando o programa estiver em curso, ambas as partes se comprometem a evitar ações unilaterais, e a consultar e negociar decisões de comum acordo.

Acréscimos ao acordo poderão ser feitos a qualquer momento desde que sejam de comum acordo entre as partes e expostos em documentos escritos. Estes acréscimos deverão ser acrescidos na forma de termo aditivo.

Este acordo terá inicialmente a duração de cinco anos, podendo vir a ser renovado, de comum acordo, no final deste período.

O balanço do intercâmbio será revisto anualmente. Em resultado desta revisão, o número de estudantes será ajustado nos anos subsequentes de forma a garantir um equilíbrio esperado em termos de número de horas/créditos.

Se o número de estudantes que participaram do intercâmbio não for o mesmo para ambas as partes no final de cinco anos, o acordo



number of students exchanged is reached.

continuará até que um equilíbrio em nú seja alcançado.

University of Kentucky

Universidade Federal de Viçosa

Susan Carvalho

Nilda de Fatima

Susan Carvalho
Associate Provost for International Programs

Prof. Nilda de Fatima Ferreira Soares
Reitor

Date 01/03/13

Date 03/01/13

M. Scott Smith

M. Scott Smith
Dean, College of Agriculture

Date 01/03/13

John Walz

John Walz
Dean, College of Engineering

Date 01/03/13



Processo nº. 008353/2001

Convênio nº. 002/2013

**ACADEMIC INTERCHANGE AGREEMENT
BETWEEN
UNIVERSITY OF KENTUCKY
AND
UNIVERSIDADE FEDERAL DE VIÇOSA**

The University of Kentucky and the Federal University of Viçosa, wishing to develop cooperative relations on the basis of established contacts and mutual understandings, especially to develop academic and cultural interchange through mutual assistance in the areas of teaching and research, agree as follows:

FIRST CLAUSE

Area of Cooperation

The area of cooperation includes, subject to mutual consent and appropriate conditions, any program offered at either University and proposed by either as desirable, feasible, and contributory to the fostering and development of the cooperative relationship between the two universities.

SECOND CLAUSE

Methods

All understandings and assistance shall be subject to availability of funds and the specific approval of the President of the University of Kentucky and the President of the Federal University of Viçosa, through such activities or programs as:

1. Exchange of faculty members and

**CONVENIO DE INTERCAMBIO J
ACADEMICO ENTRE
UNIVERSIDADE DE KENTUCKY
E
UNIVERSIDADE FEDERAL DE VIÇOSA**

A Universidade de Kentucky e a Universidade Federal de Viçosa, no intuito de desenvolver relações de cooperação com base no estabelecimento de contatos e entendimentos mútuos, enfatizando desenvolver intercâmbio acadêmico e cultural através de cooperação mútua nas áreas de ensino e pesquisa, acordam o seguinte:

CLÁUSULA PRIMEIRA

Área de Cooperação

A área de cooperação inclui, sob consentimento mútuo e existência de condições apropriadas, qualquer programa oferecido e proposto por qualquer das Universidades como desejável, executável, e contributivo ao fomento e desenvolvimento de relações de cooperação entre as duas Universidades.

CLÁUSULA SEGUNDA

Métodos

Todos os entendimentos e assistências estarão condicionados à disponibilidade de fundos e à aprovação específica dos Reitores da Universidade de Kentucky e da Universidade Federal de Viçosa, através de atividades e programas tais como:

1. Intercâmbio de membros do corpo



technical staff

2. Exchange of students

3. Conduct joint research activities

4. Participation in seminars and academic meetings

5. Special short-term academic programs

6. Cultural exchange activities

7. Joint participation in international training courses

8. Provide for undergraduate training with coursework at the University of Kentucky and the Federal University of Viçosa

9. Provide opportunities for staff development for both universities and other personnel development programs

10. Engage in consultancies

11. Other activities as deemed mutually appropriate.

The terms of such mutual assistance and necessary budget for each program and activity shall be mutually discussed and agreed upon in writing by both parties prior to the initiation of the particular activity or program. Each University will designate a Liaison Officer to develop specific activities or programs for the approval of the respective presidents.

THIRD CLAUSE

decente e do quadro de técnicos de nível superior

2. Intercâmbio de estudantes

3. Elaboração de atividades conjuntas de pesquisa

4. Participação em seminários e encontros acadêmicos

5. Programas acadêmicos especiais de curta duração

6. Atividades de intercâmbio cultural

7. Participação conjunta em cursos internacionais de treinamento

8. Proporcionar treinamento em nível de graduação com cursos realizados na Universidade de Kentucky e na Universidade Federal de Viçosa

9. Proporcionar oportunidades para desenvolvimento do quadro funcional de ambas Universidades e de outros programas de aprimoramento de pessoal

10. Exercer consultorias

11. Outras atividades julgadas mutuamente apropriadas.

Os termos de tal assistência mútua e o orçamento necessário para cada programa e atividade devem ser mutuamente discutidos e postos em acordo escrito por ambas as partes antes do início de atividades ou programas particulares. Cada Universidade designará um coordenador responsável para desenvolver atividades específicas ou programas para aprovação dos respectivos reitores.

CLÁUSULA TERCEIRA



Effective Date & Length of Agreement

This agreement will remain in force for a period of five years subject to the availability of funds, and any amendment and/or modification of this agreement requires a written approval of the President of the University of Kentucky and that of the President of the Federal University of Viçosa appended hereto. After the initial five-year period, this agreement may be renewed by mutual consent.

Either party reserves the right to terminate this agreement upon six (6) months written notice to the other. Any individual activities to be continued will be specifically identified and provided for at the time of termination.

Nothing contained herein or in the activities conducted hereunder shall constitute either party the agent, servant or employee of the other party. Each party shall be fully and solely responsible for its own actions and obligations.

This agreement shall take effect on the date indicated below and IN WITNESS HEREOF, the parties hereto have offered their signatures:

Eli Capilouto

Eli Capilouto
President

Date 01/03/2013

Examined for Form & Legality
Office of Legal Counsel
University of Kentucky

By: *Karim A. Adang*
Attorney at Law

Data de Início e Duração do Convênio

Este convênio será válido por cinco anos, mediante a disponibilidade de recursos, e qualquer emenda e, ou, modificação do acordo requer aprovação escrita do Reitor da Universidade Kentucky e do Reitor da Universidade de Viçosa e deve ser anexada a este documento. Terminado o período inicial de cinco anos, O convênio pode ser renovado sob consentimento mútuo.

As partes reservam-se o direito de denunciar o convênio sob comunicação escrita com seis (6) meses de antecedência. Quando do término do convênio, a prorrogação de qualquer atividade individual será identificada e providenciada.

O conteúdo deste documento ou as atividades conduzidas sob o mesmo não devem constituir qualquer das partes em agente, servidor ou empregado da outra parte. Cada parte deve ser total e unicamente responsável por suas próprias ações e obrigações.

Este convênio entrará em vigor na data abaixo discriminada, e EM TESTEMUNHO DA VERDADE, as partes o consignam:

Joana

Prof. Nilda de Fatima Ferreira Soares
Reitor

Data 03/01/2013

