

**STUDENTS WORKLOAD AND COURSE DESCRIPTION (FIRST SEMESTER PhD. AgSE IN CROP AND PASTURE PRODUCTION AND SUSTAINABLE ENVIRONMENT PROGRAMME)**

<b>APPLIED STATISTICS FOR AGRICULTURAL RESEARCH</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b>	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 901	210 hours	7.0 ECTS	First Semester	Each First Semester	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Lectures b) Class work c) Practical	<b>Contact hours</b> 75 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b> a) Participation in the course is compulsory for all students admitted for PhD.AgSE Crop and Pasture Production b) Participation is subject to confirmation of student's registration for the course				
<b>3</b>	<b>Learning outcomes</b> 1)The students will be able to comprehend and understand scientific experiments and analysis 2) To be able to understand research process and scientific methods as applied in agricultural research 3) Understand experimental designs and be able to apply the appropriate design under field and Laboratory conditions. 4) Understand methods of collecting data, field organization, and analysis of data				
<b>4</b>	<b>Subject aims</b> The aim of the course is for students to be able to set up hypothesis, use appropriate designs, analyse and to interpret the results. <b>Course Contents</b> Experimental designs, Sampling techniques, factorial experiments, split plot design, multiple and partial regression and correlation, analysis of covariance.				
<b>5</b>	<b>Teaching methods</b> Lectures, sharing of materials via learning tools, individual presentations and discussions				
<b>6</b>	<b>Assessment methods</b>				

	Individual Presentations, Continuous Assessment, Written end-of-the-semester examination This course will be graded as follows: Group Assignments 10%, Test(s) 20% Final Examination 70%
<b>7</b>	<b>This module is used in the following degree programmes as well</b> Masters of Agriculture in the College of Plant Science and Crop Production, FEDERAL University of Agriculture, Abeokuta.
<b>8</b>	<b>Responsibility for module</b> • Dr Emmanuel O. Idehen <a href="mailto:ideheneo@funaab.edu.ng">ideheneo@funaab.edu.ng</a>
<b>9</b>	<b>Other information</b> <b>Suggested References</b> Applied Statistics in Agricultural, Biology and Environmental Sciences 2018. Published by American Society for Agronomy, Crop Science Society of America and Soil Science Society of America. Statistical Procedures for Agricultural Research, 2nd Edition. Kwanchai A. Gomez, Arturo A. Gomez. ISBN: 978-0-471-87092-0. Feb 1984. 704 pages -Applied Statistics for Scientific Studies. T. A. T. Wahua. Afrika Link Publishers, University of Ibadan , Nigeria. ISBN: 978-2915-15-7  <b>Note:</b> This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 210 hours of learning to the course, including participation in 75 hours of course lectures and practical and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.

<b>ADVANCED CROP PRODUCTION</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b>	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 903	180 hours	6.0 ECTS	First Semester	One time in each second Semester	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Lectures b) Seminars	<b>Contact hours</b> 45 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	

	c) Practicals			
<b>2</b>	<b>Prerequisites for participation</b> a) Participation in the course is compulsory for all students admitted for PhD.AgSE Crop and Pasture Production b) Participation is subject to confirmation of student's registration for the course			
<b>3</b>	<b>Learning outcomes</b> The course is to enable the students to: a) Understand the limiting and optimum conditions for crop growth b) Various production system of cops as well as their diversity.			
<b>4</b>	<b>Subject aims/Course Contents</b> <a href="#">Environmental factors of crop production. Yield limiting Factors and concepts related to their influence on crop growth, Production Systems and diversity, plant distribution and crop yield.</a>			
<b>5</b>	<b>Teaching methods</b> Lectures, Practical, individual presentations and discussions			
<b>6</b>	<b>Assessment methods</b> Teaching and learning will be conducted through weekly lectures, assigned readings and discussion seminars. Individual Presentations, Continuous Assessment, Summative Assessment, Written end-of-the-semester examination This course will be graded as follows: Individual Presentation 5%, Practicals 15%, Test(s) 20% Final Examination 60%			
<b>7</b>	<b>This module is used in the following degree programmes as well</b> N/A			
<b>8</b>	<b>Responsibility for module</b> · Prof F. O. Olasantan			
<b>9</b>	<b>Other information</b> <b>Suggested References</b>  <b>Important Note:</b> This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to			

devote a total of 210 hours of learning to the course, including participation in 75 hours of course lectures and practicals and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.
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**STUDENTS WORKLOAD AND COURSE DESCRIPTION SECOND SEMESTER PhD. AgSE IN CROP AND PASTURE PRODUCTION AND SUSTAINABLE ENVIRONMENT PROGRAMME**

<b>ADVANCED CROPPING SYSTEMS</b>					
<b>Module Code</b> CRP 902	<b>Student workload</b> 180 hours	<b>Credits</b> (according to ECTS) 6.0	<b>Semester</b> Second Semester	<b>Frequency</b> Once every academic session by the Second Semester	<b>Duration</b> 15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Lectures c) Students' Presentation	<b>Contact hours</b> 45 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b>				
<b>3</b>	<b>Learning outcomes</b> After the completion of this course, the Students will: a) Be able to understand the various farming systems b) Cost benefits of mixed and sole cropping				
<b>4</b>	<b>Subject aims/Course Contents</b> Land tenure systems in West Africa, Soil and water conservation, Mechanized farming for various cropping systems e.g Agroforestry, Alley farming, Mixed vs sole cropping systems, Mixed farming, Zero-tillage farming (Conservation agriculture), Plantation agriculture and Organic Agriculture. Greenhouse (controlled environment) crop production, Agronomy of specific crops of importance to African food security. Crop protection, Crop nutrition. Thematic term papers and seminars on regional cropping systems of West Africa, developing resilient farming systems in West Africa etc.				
<b>5</b>	<b>Teaching methods</b>				

	Lectures, practical demonstrations, individual presentations, and discussions
<b>6</b>	<p><b>Assessment methods</b></p> <p>Individual Presentations, Continuous Assessment, Written end-of-the-semester examination</p> <p>Assignments &amp; Presentations (15%), Mid-Semester Tests (15%) and Final Examination (70%)</p>
<b>7</b>	<p><b>This module is used in the following degree programmes as well</b></p> <p>N/A</p>
<b>8</b>	<p><b>Responsibility for module</b></p> <p>Prof. F. O. Olasantan</p> <p><a href="mailto:olasantanfo@funaab.edu.ng">olasantanfo@funaab.edu.ng</a></p>
<b>9</b>	<p><b>Other information</b></p> <p><b>1. References</b></p> <p><b>2. Important Note</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 180 hours of learning to the course, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 6.0 ECTS credit equivalent.</p>

<b>ADVANCED CROP ECOLOGY</b>					
<b>Module Code</b>	<b>Student workload</b>	<b>Credits</b>	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
<b>CRP 904</b>	180 hours	(according to ECTS) 6.0	Second Semester	Once every academic session by the second Semester	15 Weeks
<b>1</b>	<p><b>Types of courses</b></p> <p>a) Class Work</p> <p>b) Hands–on Practical</p> <p>c) Students’ Presentation</p>	<p><b>Contact hours</b></p> <p>45 hours</p>	<p><b>Independent study</b></p> <p>135 hours</p>	<p><b>Class size</b></p> <p>Avg of 6 (Max 15)</p>	

2	<p><b>Prerequisites for participation</b></p> <p>Basic knowledge of crop production environments</p>
3	<p><b>Learning outcomes</b></p> <p>At the end of this course, the students should be able to:</p> <ul style="list-style-type: none"> <li>a) Know the environmental factors that affects plant growth</li> <li>b) The distribution of crops based on their adaptations to varying environments.</li> </ul>
4	<p><b>Subject aims</b></p> <p>The aim of the module is to:</p> <p>Enable students to understand the environmental factors/conditions and their effects on crop production</p> <p><b>Course Contents</b></p> <p>Ecology and agronomy of different crops. Climatic, edaphic, biotic and geographical factors of the environment and ant their relationship to crop distribution and productivity.</p>
5	<p><b>Teaching methods</b></p> <p>Lectures; practical demonstrations; presentations and discussions.</p>
6	<p><b>Assessment methods</b></p> <p>Performance in the course will be assessed by a combination of assignments (10%), a Mid Semester Test (15%), a term paper (25%) and a final examination (50%). .</p>
7	<p><b>This module is used in the following degree programmes as well</b></p> <p>M. Agric. (Crop Physiology)</p>
8	<p><b>Responsibility for module</b></p> <p>Dr. O. S. Sakariyawo</p> <p><a href="mailto:sakariyawoos@funaab.edu.ng">sakariyawoos@funaab.edu.ng</a></p>
9	<p><b>Other information</b></p> <p><b>1. References</b></p> <p><b>Crop Ecology Productivity and Management in Agricultural Systems.</b> David J Connor, Robert S Loomis, Kenneth G Cassman. <a href="#">Cambridge University Press</a></p> <p><b>2. Important Note</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote about 180 hours to learning of the course content, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned</p>

	reading, personal studies, assignments, group work. Hence, the course is of 6.0 ECTS credit equivalent.
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<b>CROP GROWTH AND DEVELOPMENT</b>					
<b>Course code</b> <b>CRP 906</b>	<b>Student work- Load</b>	<b>Credits</b> (ECTS)	<b>Semester</b> Second Semester	<b>Frequency</b> Each Second Semester	<b>Duration</b> 15 weeks per semester
	180 hours	6.0 ECTS			
<b>1</b>	<b>Types of Courses</b> (a) Classroom lecture (b) Term paper	<b>Contact</b>	<b>hours</b> 45 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)
<b>2</b>	<b>Prerequisites for participation:</b> Registration for the course at the PhD AgSE				
<b>3</b>	<b>Learning outcomes:</b> After successfully completing this course, students should be able to:				
<b>4</b>	<b>Course Contents</b> Growth and crop phenology, hormonal control of growth and yield sustenance as influenced by mineral nutrition and water supply, yield improvement and rejuvenation of low producing crops.				
<b>5</b>	<b>Teaching methods:</b> (a) Lectures (b) discussions (c) group presentation				
<b>6</b>	<b>Assessment methods:</b>				

	<p>(a) The course is evaluated through various combinations of methods including final examinations, term papers oral presentations, individual study and group work</p> <p>(b) This course will be graded as follows: Class Attendance 5%, Assignments, 15%, Test(s) 10% Final Examination 70%</p>
7	<b>This module/course is used in the following degree programme(s):</b>
8	<p><b>Responsibility for module/course:</b></p> <p>Dr. O. S. Sakariyawo</p> <p><a href="mailto:sakariyawoos@funaab.edu.ng">sakariyawoos@funaab.edu.ng</a></p>
9	<p><b>Other information e.g. references:</b></p> <p>1. <a href="https://link.springer.com">https://link.springer.com</a> &gt; chapter</p> <p>2. <a href="https://www.cropsreview.com/plant-growth.html">https://www.cropsreview.com/plant-growth.html</a></p> <p><b>Important Note:</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 180 hours of learning to the course, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies and assignments). Hence, the course is of 6.0 ECTS credit equivalent.</p>

PLANT GENETICS BREEDING						
	<b>Course code</b>	<b>Student work-load</b>	<b>Credits (ECTS)</b>	<b>Semester</b> Second Semester	<b>Frequency</b> One time in each second Semester	<b>Duration</b> 15 Weeks
	CRP 908	180 hours	6.0 ECTS			
<b>1</b>	<b>Types of Courses</b>	<b>Contact hours</b>	<b>Independent study</b>	<b>Class size</b>		
	a) Classroom lecture b) Term paper presentation	45 hours	135 hours	Avg of 6 (Max 15)		
<b>2</b>	<b>Prerequisites for participation:</b>					



	Basic knowledge of Genetics and plant Breeding
	<b>Learning outcomes:</b> After successfully completing this course, students should be able to:
3	<ul style="list-style-type: none"> <li>a) Know the principles and application of breeding techniques</li> <li>b) Understand the effect of interaction between genotypes and the environment.</li> </ul>
4	<b>Course Contents</b> Gene action, heritability, inbreeding and heterosis. Response to selection, selection method for self and cross pollinating crops, Genotype x environment interaction. Breeding techniques for self-cross pollinating crops, conservation of genetic resources.
5	<b>Teaching methods:</b> <ul style="list-style-type: none"> <li>a) Lectures</li> <li>b) discussions</li> <li>c) Practicals</li> </ul>
6	<b>Assessment methods:</b> (a) The course is evaluated through various combinations of methods including final examinations, term papers, individual study and group work (b) This course will be graded as follows: Class Attendance 5%, Assignments 15%, Test(s) 10% Final Examination 70%
7	<b>This module/course is used in the following degree programme(s):</b> M.AgSE
8	<b>Responsibility for module/course:</b> Dr E. O. Idehen <a href="mailto:ideheneo@funaab.edu.ng">ideheneo@funaab.edu.ng</a>
9	<b>Other information:</b> <b>references:</b>  <b>Important Note:</b> This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote about 180 hours to learning of the course content, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments and group work) Hence, the course is of 6.0 ECTS credit equivalent.

<b>PHYSIOLOGY AND GENETICS OF CROPS</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b>	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 910	120 hours	(according to ECTS) 4.0 ECTS	Second Semester	One time in each semester and per session	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) Students' Presentation	<b>Contact hours</b> 30 hours	<b>Independent study</b> 90 hours	<b>Class size</b> Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b> Participation is subject to confirmation of student registration for the course Basic knowledge of Crop Physiology and genetics at the first degree				
<b>3</b>	<b>Learning outcomes</b> After the completion of this course, the Students will be able to: a) Understand the different pathways of photosynthesis in plants b) Know the structure and roles of DNAs, RNAs and the various coding of amino acids. c) Study the relationship between the plant and its environment.				
<b>4</b>	<b>Subject aims/Course Contents</b> Plant environment, relationship between genotype and the environment, methods of detecting varietal differences, photosynthetic efficiency, C3 and C4 plants. Physiological basis of heterosis in plants. Molecular genetics-DNA and RNA, Genetic code.				
<b>5</b>	<b>Teaching methods</b> Lectures, term papers and individual presentations, and discussions				
<b>6</b>	<b>Assessment methods</b> Individual Presentations, Continuous Assessment, Summative Assessment, Written end-of-the-semester examination Continuous Assessment Tests (20%), Assignment (10%) and Examination (70%)				

7	<b>This module is used in the following degree programmes as well</b> Master in Agricultural Plant Breeding (M. Agric) FUNAAB
8	<b>Responsibility for module</b> Dr. J. B. O. Porbeni
9	<b>Other information</b> <b>References</b> a) <a href="https://link.springer.com">https://link.springer.com</a> › article b) <a href="https://www.nature.com">https://www.nature.com</a> › news
	This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote about 180 hours to learning of the course content, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments and group work) Hence, the course is of 6.0 ECTS credit equivalent.

ADVANCED CROP TAXONOMY					
Module Code	Student workload	Credits	Semester	Frequency	Duration
CRP 912	180 hours	(according to ECTS) 6.0	Second Semester	Once every academic session	15 Weeks
1	<b>Types of courses</b> Theory with Field Practical and Class Presentations	<b>Contact hours</b> 45 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	
2	<b>Prerequisites for participation</b> Basic knowledge of plant systematics				
3	<b>Learning outcomes</b> Upon a successful completion of this course; Students will be expected to gain a working knowledge of the identification and classification of members of the Plant Kingdom, emphasizing phylum and family characteristics. Major Bryophyte, Pteridophyte, Gymnosperm, and Angiosperm families are studied in lecture and laboratory formats. Additionally the course will provide an				

	understanding of principles and rules for proper botanical nomenclature. Preparation of collections; field and laboratory experiences
<b>4</b>	<p><b>Subject aims</b></p> <p>This course is designed to give students a strong grounding in the dynamic field of <b>Plant Taxonomy</b></p> <p><b>/Content</b></p> <p>Angiosperm systematics, procedures for preparation of long term herbarium materials, use of keys in plant taxonomy. Relevance of plant anatomy, genetic, phytochemistry. Numerical taxonomy, Chemosystematics.</p>
<b>5</b>	<p><b>Teaching methods</b></p> <p>Class lectures, field practical/group work, assigned readings and discussions.</p>
<b>6</b>	<p><b>Assessment methods</b></p> <p>Graded assignments (5-10marks), mid-semester test (15 - 20 marks), course project report and presentations based on field practical/group work (20 - 30marks) and final examination (50 marks)</p>
<b>7</b>	<p><b>This module is used in the following degree programmes as well</b></p> <p>M.Agric. Plant Breeding and M.Agric. Seed Technology in FUNAAB.</p>
<b>8</b>	<p><b>Responsibility for module</b></p> <p>Dr. C. O. Alake</p> <p><a href="mailto:alakeco@funaab.edu.ng">alakeco@funaab.edu.ng</a></p>
<b>9</b>	<p><b>Other information</b></p> <p><b>1. References</b></p> <p><a href="https://www.academia.edu">https://www.academia.edu</a> › <a href="#">Advanced Plant Taxonomy</a></p> <p><a href="https://www.sciencedirect.com">https://www.sciencedirect.com</a> › <a href="#">biochemistry-genetics-and-molecular-biology</a></p> <p><a href="http://catalog.oneonta.edu">catalog.oneonta.edu</a> › <a href="#">preview_course_nopop</a></p> <p><b>2. Important Note</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 180 hours of learning to the course, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 6.0 ECTS credit equivalent.</p>

<b>ADVANCED SEED PROCESSING AND HANDLING</b>					
<b>Module code</b> CRP 914	<b>Student workload</b> 210 hours	<b>Credits</b> 7.0 ECTS	<b>Semester</b> Second Semester	<b>Frequency</b> Each second Semester	<b>Duration</b> 15 Weeks
<b>1</b>	<b>Types of courses</b> Lectures Class Work Practical	<b>Contact hours</b> 75 hours	<b>Independent study</b> 135 hours	<b>Class size (Potential)</b> Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b> a) Participation in the course is required for all students admitted for M.AgSE b) Student's participation is subject to confirmation of registration for the course				
<b>3</b>	<b>Learning outcomes</b>				
<b>4</b>	<b>Subject aims</b>  <b>Course Contents</b> Seed processing principles, pre cleaning, and conditioning, basic cleaning, dimensional sizing, specific gravity separation, surface texture separation, air separators, electronic separators, miscellaneous cleaning equipment. Commercial seed treatments. Seed handling, accessories design and layout of processing plant.				
<b>5</b>	<b>Teaching methods</b> Lectures, sharing of materials via learning tools, case studies and discussions.				
<b>6</b>	<b>Assessment methods</b> <i>Components:-</i> Group Assignments, Continuous Assessment Test(s) and Written end-of-the-semester examination <i>Grading scale:-</i> a. Practical - 10%;				

	b. Test(s) - 30% c. Final Examination - 60%
<b>7</b>	<b>This module is used in the following degree programmes as well</b>  N/A
<b>8.</b>	<b>Responsibility for module</b>  Prof. M.A. Adebisi <a href="mailto:adebisima@funaab.edu.ng">adebisima@funaab.edu.ng</a>
<b>9</b>	<b>Other information</b>  <b>1. Suggested Further Readings</b>  <b>2.0 Important Note:</b>  This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 210 hours of learning to the course, including participation in 75 hours of course lectures and practicals and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.

<b>APPLIED SEED CERTIFICATION</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b>	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 916	210 hours	7.0 ECTS credits	2 <sup>nd</sup> . Sem.	One time in each Second Semester	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) Practical	<b>Contact hours</b>  75 hours	<b>Independent study</b>  135 hours	<b>Class size</b>  Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b> a) Participation in the course is required for all students admitted for M.AgSE b) Student's participation is subject to confirmation of registration for the course				
<b>3</b>	<b>Learning outcomes</b> After the completion of this course, the Students will:				
<b>4</b>	<b>Subject aim/Course Contents</b>				

	Brief history, objectives, Certification Authority, Manpower requirements, elements of sound seed certification programme, minimum certification standards, Field inspection, pre and post-harvest control (Varietal purity, seed borne disease). Seed quality tests in the laboratory.
5	<b>Teaching methods</b> Class lectures, case studies, field practical/group work, assigned readings and discussions.
6	<b>Assessment methods</b> Continuous Assessment Tests (20%), Assignment (10%) and Examination (70%)
7	<b>This module is used in the following degree programmes as well</b> M.Agric. in Seed Technology in FUNAAB
8.	<b>Responsibility for module</b> Prof. M. A. Adebisi <a href="mailto:adebisima@funaab.edu.ng">adebisima@funaab.edu.ng</a>
9	<b>Other information</b> <b>1. Recommended Text</b>
	<b>2. Important Note</b> This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 210 hours of learning to the course, including participation in 75 hours of course lectures and practical and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.

ADVANCED SEED STORAGE					
Module code	Student workload	Credits	Semester	Frequency	Duration
CRP 918	210 hours	7.0 ECTS	Second Semester	One time in each second Semester	15 weeks
1	<b>Types of courses</b> a) Lectures b) Class work c) Practical	<b>Contact hours</b> 75 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	

2	<p><b>Prerequisites for participation</b></p> <p>Participation is also always subject to confirmation of student registration for the course.</p>
3	<p><b>Learning outcomes</b></p> <p>On successful completion of this course students will be able to understand:</p>
4	<p><b>Subject aims/Course Contents</b></p> <p>Types of seed, seed moisture relationships. Life span of seeds, seed deterioration, seed storage, purposes and percepts. Storage pests, storage fungi. Types of storage, conditional storage. Seed packaging.</p>
5	<p><b>Teaching methods</b></p> <p>Lectures, sharing of materials via learning tools, case studies, group work, individual presentations, and discussions</p>
6	<p><b>Assessment methods</b></p> <p>Individual Presentations, Group Assignments, Continuous Assessment, Summative Assessment, Written end-of-the-semester examination</p> <p>Continuous Assessment Tests (20%), Assignment (10%) and Examination (70%)</p>
7	<p><b>This module is used in the following degree programmes as well</b></p> <p>N/A</p>
8	<p><b>Responsibility for module</b></p> <p>Prof. M.A. Adebisi</p> <p><a href="mailto:adebisima@funaab.edu.ng">adebisima@funaab.edu.ng</a></p>
9	<p><b>Other information</b></p>
	<p><b>Important Note:</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 210 hours of learning to the course, including participation in 75 hours of course lectures and practicals and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.</p>



<b>ADVANCED PASTURE MANAGEMENT AND ANIMAL PRODUCTION</b>					
<b>Module code</b> CRP 920	<b>Student workload</b> 180 hours	<b>Credits</b> 6.0 ECTS	<b>Semester</b> 2 <sup>nd</sup> . Sem.	<b>Frequency</b> One time in each Second Semester	<b>Duration</b> 15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) Students' Presentation d) Field trip and case studies	<b>Contact hours</b> 75 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b>				
<b>3</b>	<b>Learning outcomes</b> After the completion of this course, the Students will:				
<b>4</b>	<b>Subject aims</b> The aim of the module is to  <b>Course Contents</b> Pasture improvement techniques, proper uses of tropical pastures, method of enhancing quality and utilization, grazing management, its effect on pasture and animal productivity, stocking rate, carrying capacity, stocking density, grazing season etc. production of different classes of ruminants on pasture, pasture requirement for different classes of animals.				
<b>5</b>	<b>Teaching methods</b> Class lectures, case studies, field practical/group work, assigned readings and discussions.				
<b>6</b>	<b>Assessment methods</b>				

	The course is evaluated through various combinations of methods : final examinations, term papers, and oral presentations, individual study and group work This course will be graded as follows: Assignments 10%, Test(s) 20% Final Examination 70%
7	<b>This module is used in the following degree programmes as well</b> N/A
8.	<b>Responsibility for module</b> Prof. J. A. Olanite <a href="mailto:olaniteja@funaab.edu.ng">olaniteja@funaab.edu.ng</a>
9	<b>Other information</b> 1. Recommended materials
	<b>2.0 Important Note</b>

<b>APPLIED RANGE MANAGEMENT AND UTILIZATION</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b> (according to ECTS)	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 922	180 hours	4.0 ECTS	1 <sup>st</sup> . Sem.	Once in each First Semester per session	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c)Students' Presentation	<b>Contact hours</b> 45 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 20 (Max 40)	
<b>2</b>	<b>Prerequisites for participation</b> Participation is subject to confirmation of student registration for the course				
<b>3</b>	<b>Learning outcomes</b>				
<b>4</b>	<b>Subject aims</b>				

	<p>The aim of the module is to</p> <p><b>Course Contents</b></p> <p>Range ecology and conditions, range land productivity, range resources and their roles in domesticated animal production, influences of man on range land productivity.</p>
5	<p><b>Teaching methods</b></p> <p>Lectures, sharing of materials via learning tools, global scenarios on agricultural topics, case studies, group work, individual presentations, and discussions</p>
6	<p><b>Assessment methods</b></p> <p>Individual Presentations, Group Assignments, Continuous Assessment, Summative Assessment, Written end-of-the-semester examination</p> <p>Individual Assignments 10%, Test(s) 10%, Policy paper presentation (10%), Final Examination 70%</p>
8	<p><b>Responsibility for module</b></p> <p>Prof. O. S. Onifade</p> <p><a href="mailto:onifadeos@funaab.edu.ng">onifadeos@funaab.edu.ng</a></p>
9	<p><b>Other information</b></p> <p>a) References</p>
	<p><b>b. Important Note</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 180 hours of learning to the course, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 6.0 ECTS credit equivalent.</p>

**PASTURE PRODUCTION AND PRODUCTIVITY**

<b>Module code</b> CRP 924	<b>Student workload</b> 120 hours	<b>Credits</b> 4.0 ECTs	<b>Semester</b> 2 <sup>nd</sup> . Sem.	<b>Frequency</b> One time in each Second Semester	<b>Duration</b> 15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) Students' Presentation	<b>Contact hours</b> 30 hours	<b>Independent study</b> 90 hours	<b>Class size</b> Avg of 20 (Max 40)	
<b>2</b>	<b>Prerequisites for participation</b>				
<b>3</b>	<b>Learning outcomes</b> The aim of the module is to				
<b>4</b>	<b>Subject aims</b> The general objective is to understand basic marketing concepts and elements. <b>The specific course contents are:</b> Pasture productivity indices, herbage yield measurement, sampling techniques, relationship between herbage yield and animal productivity, quality indices and evaluation techniques, measuring dry matter yields of shrubs and trees used as forage.				
<b>5</b>	<b>Teaching methods</b> Class lectures, case studies, field trip, assigned readings and discussions.				
<b>6</b>	<b>Assessment methods</b> The course is evaluated through various combinations of methods : final examinations, term papers, and oral presentations, individual study and group work This course will be graded as follows: Assignments 10%, Test(s) 20% Final Examination 70%				
<b>7</b>	<b>This module is used in the following degree programmes as well</b> N/A				
<b>8.</b>	<b>Responsibility for module</b> Prof. J. A. Olanite <a href="mailto:olaniteja@funaab.edu.ng">olaniteja@funaab.edu.ng</a>				
<b>9</b>	<b>Other information</b> <b>1. Recommended materials</b>				

	<p><b>2. Important Note</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 180 hours of learning to the course, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 6.0 ECTS credit equivalent.</p>
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<b>ADVANCED PLANT GROWTH AND YIELD ANALYSIS</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b> (according to ECTS)	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 926	180 hours	6.0 ECTS	Second Sem.	One time in each second Semester	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) Students' Presentation	<b>Contact hours</b> 45 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b> N/A				
<b>3</b>	<b>Learning outcomes</b> The student should be able to understand and apply the various theories in plant growth and factors affecting field crops.				
<b>4</b>	<b>Subject aims/Course Contents</b> Kinetics of growth rate. Theories components of growth rate, determination of primary values, data analysis and transformation. Uses and abuses of growth analysis. Environmental regulation of the components of yield. Measurement of growth resources, dry matter production and its distribution into various sinks. Roles of plant characters in development of growth and yield. Regulations of growth and yield. Climatic factors affecting growth and yield field crops.				
<b>5</b>	<b>Teaching methods</b> Lectures, individual presentations, and discussions				
<b>6</b>	<b>Assessment methods</b>				

	Individual Presentations, Continuous Assessment, Written end-of-the-semester examination Continuous Assessment Tests (20%), Assignments (10%) and Examination (70%)
7	<b>This module is used in the following degree programmes as well</b> N/A
8	<b>Responsibility for module</b> Dr. O. S. Sakariyawo <a href="mailto:sakariyawoos@funaab.edu.ng">sakariyawoos@funaab.edu.ng</a>
9	<b>Other information</b> <b>1) References</b>
	<b>2.0 Important Note:</b> This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 180 hours of learning to the course, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 6.0 ECTS credit equivalent.

<b>ADVANCED POST HARVEST PHYSIOLOGY OF CROPS</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b>	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 928	180 hours	6.0 ECTS	2 <sup>nd</sup> . Sem.	One time in each Second Semester	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) Students' Presentation	<b>Contact hours</b> 45 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b> Registration for PhD AgSE Crop and Pasture Production Programme				
<b>3</b>	<b>Learning outcomes</b> On successful completion of this course students will be able to understand: The physiological basis of crop growth and maturity				

4	<p><b>Subject aims</b></p> <p>The aim of the module is to</p> <p><b>course contents:</b></p> <p>Harvest indices, concepts of ripening changes during maturation, ripening and senescence, pre and post-harvest factors affecting crop quality. Regulation of ripening and senescence.</p>
5	<p><b>Teaching methods</b></p> <p>Lectures, <i>individual presentations, and discussions</i></p>
6	<p><b>Assessment methods</b></p> <p>Individual Presentations, Continuous Assessment, Written end-of-the-semester examination</p> <p>This course will be graded as follows: Assignments 10%, Test(s) 20% Final Examination 70%</p>
7	<p><b>This module is used in the following degree programmes as well</b></p> <p>Dr. O.S. Sakariyawo</p> <p><a href="mailto:sakariyawoos@funaab.edu.ng">sakariyawoos@funaab.edu.ng</a></p>
8.	<p><b>Responsibility for module</b></p>
9	<p><b>Other information</b></p> <p><b>1. Recommended materials</b></p>
	<p><b>2. Important Note</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 180 hours of learning to the course, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 6.0 ECTS credit equivalent.</p>

**ADVANCED INSECT MORPHOLOGY, SYSTEMATICS AND TAXONOMY**

<b>Module code</b> CRP 930	<b>Student workload</b> 210 weeks	<b>Credits</b> (according to ECTS) 7.0 ECTS	<b>Semester</b> Second Sem.	<b>Frequency</b> One time in each Second Semester	<b>Duration</b> 15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) Students' Presentation	<b>Contact hours</b> 75 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	
<b>2</b>	<b>Prerequisites for participation</b> It is an elective course .Student can only participate if registered for the course				
<b>3</b>	<b>Learning outcomes</b> The students are to be able to identify and classify insects of economic interest.				
<b>4</b>	<b>Subject aim/Course Contents</b> <a href="#">Insect systematics, purpose and methods of identification, classification, components of biological classification. Taxonomic categories, nomenclature, classification of the class Insects.</a>				
<b>5</b>	<b>Teaching methods</b> Lectures, practical, individual presentations and discussions				
<b>6</b>	<b>Assessment methods</b> Individual Presentations, Practicals, Group Assignments, Continuous Assessment, , Written end-of-the-semester examination This is evaluated as follows: Class Attendance 5%, Exercise 10% (Assignments 5%, practical 10%, Test(s) 25% Final Examination 60%				
<b>7</b>	<b>This module is used in the following degree programmes as well</b> N/A				
<b>8</b>	<b>Responsibility for module</b> Prof. O.R. Pitan <a href="mailto:pitanor@funaab.edu.ng">pitanor@funaab.edu.ng</a>				
<b>9</b>	Other information <b>1) References</b>				



	<p><b>2.0 Important Note:</b></p> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 210 hours of learning to the course, including participation in 75 hours of course lectures and practical and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.</p>
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<b>APPLIED ENTOMOLOGY IN CROP PRODUCTION</b>					
Module code	Student workload	Credits	Semester	Frequency	Duration
CRP 932	210 hours	7.0 ECTS	2 <sup>nd</sup> . Sem.	One time in each Second Semester	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) Practical		<b>Contact hours</b> 75 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)
<b>2</b>	<b>Prerequisites for participation</b> Registration for PhD AgSE Programme and basic knowledge of insect systematics				
<b>3</b>	<b>Learning outcomes</b> On successful completion of this course students will be able to: Identify and control insect pests of economic interest.				
<b>4</b>	<b>Subject aims/Course Contents</b> Principle of insect control-definition and categories of pest status. Insect pest damage, economics of insect pest attack, forecasting insect outbreak, methods of pest control – Biological, genetic, environmental, chemical, mechanical, physical, legislative, Cultural, Host Plant resistance, integrated pest management.				
<b>5</b>	<b>Teaching methods</b> Lectures, practical, group work <i>and discussions</i>				
<b>6</b>	<b>Assessment methods</b>				

	Individual Presentations, Group Assignments, Continuous Assessment, Summative Assessment, Written end-of-the-semester examination This course will be graded as follows: Assignments 10%, Test(s) 20% Final Examination 70%
7	<b>This module is used in the following degree programmes as well</b> N/A
8.	<b>Responsibility for module</b> Prof. O.R. Pitan <a href="mailto:pitanor@funaab.edu.ng">pitanor@funaab.edu.ng</a>
9	<b>Other information</b> <b>1. Recommended materials</b>
	<b>2. Important Note</b> This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 180 hours of learning to the course, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 6.0 ECTS credit equivalent.

**STUDENTS WORKLOAD AND COURSE DESCRIPTION (SECOND SEMESTER PhD. AgSE IN AGRICULTURAL ECONOMICS AND ENVIRONMENTAL POLICY PROGRAM**

<b>ADVANCED MYCOLOGY</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b>	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 934	210 hours	7.0 ECTs	1 <sup>st</sup> . Sem.	One time in each First Semester	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars	<b>Contact hours</b> 75 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 6 (Max 15)	

	c) Students Term Papers Presentation			
<b>2</b>	<b>Prerequisites for participation</b>			
<b>3</b>	<b>Learning outcomes</b> By the end of the course the student will be able to identify, classify and proffer solutions to the control of fungal causal organisms.			
<b>4</b>	<b>Subject aims/ Contents</b> Classification and nomenclature of Plant parasitic fungi, Morphology, biology and ecology of fungi. Methods of determining nutritional requirements of fungi. Effect on environmental factors on growth and sporulation.			
<b>5</b>	<b>Teaching methods</b> Class lectures, case studies, field practical/group work, assigned readings and discussions.			
<b>6</b>	<b>Assessment methods</b> The course is evaluated through various combinations of methods: final examinations, term papers, and Practical.  This course will be graded as follows: Assignments 10%, Test(s) 20%, Oral presentation 20% Final Examination 50%			
<b>7</b>	<b>This module is used in the following degree programmes as well</b>			
<b>8.</b>	<b>Responsibility for module</b> Dr. C. G. Afolabi <a href="mailto:afolabicg@funaab.edu.ng">afolabicg@funaab.edu.ng</a>			
<b>9</b>	<b>Other information</b> <b>1. Recommended materials</b>			
	<b>2. Important Note</b> This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 210 hours of learning to the course, including participation in 75 hours of course lectures and practical and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.			

<b>ADVANCED BACTERIOLOGY</b>					
<b>Module code</b>	<b>Student workload</b>	<b>Credits</b>	<b>Semester</b>	<b>Frequency</b>	<b>Duration</b>
CRP 936	180 hours	6.0 ECTs	2 <sup>nd</sup> Semester	One in each Second Semester	15 Weeks
<b>1</b>	<b>Types of courses</b> a) Class Work b) Seminars c) lectures d) Practicals	<b>Contact hours</b> 45 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg of 10 (Max 30)	
<b>2</b>	<b>Prerequisites for participation</b> a) Participation in the course is compulsory for all students admitted for PhD.AgSE b) Participation is subject to confirmation of student registration for the course.				
<b>3</b>	<b>Learning outcomes</b> On successful completion of the course, students should be able to Identify and classify bacteria and also control plant diseases caused by bacteria.				
<b>4</b>	<b>Subject aims/ Contents</b> Classification and properties of Plant pathogenic bacteria. Growth and reproduction. The genetics of bacteria. Kinds of inoculum produced. Dissemination. Bacterial disease of National and International importance. Control measures, quarantine, cultural, chemical, host-plant resistance etc.				
<b>5</b>	<b>Teaching methods</b> Class lectures and field practical.				
<b>6</b>	<b>Assessment methods</b> The course is evaluated through various combinations of methods. Each unit contains self-assessment exercises, in addition to tutor-marked assignments (TMAs). Students will be assessed through final examinations, term papers, and oral presentations, individual study and group work  This course will be graded as follows: Assignments 10%, Test(s) 20%, Oral presentation 20% Final Examination 50%				
<b>7</b>	<b>This module is used in the following degree programmes as well</b>				

8.	<b>Responsibility for module</b> Prof. A. R. Popoola <a href="mailto:popoolaar@funaab.edu.ng">popoolaar@funaab.edu.ng</a>
9	<b>Other information</b> <b>1. Recommended materials</b>
	<b>2. Important Note</b> <p>This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 45 hours of class lectures and demonstrations. Students are however, expected to devote a total of 210 hours of learning to the course, including participation in 75 hours of course lectures and practical and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using statistical software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.</p>

<b>ADVANCED PLANT VIROLOGY</b>					
<b>Module Code:</b> CRP 938	<b>Student workload</b> 210 hours	<b>Credits</b> (according to ECTS) 7.0	<b>Semester</b> Second Semester	<b>Frequency</b> Once every academic session by the Second Semester	<b>Duration</b> 15 Weeks
1	<b>Types of courses</b> a) Class Work/lectures b) Hands–on Practical c) Students’ Presentation	<b>Contact hours</b> 75 hours	<b>Independent study</b> 135 hours	<b>Class size</b> Avg. of 6 (Max 15)	
2	<b>Prerequisites for participation</b> Basic knowledge of plant viruses				
3	<b>Learning outcomes</b> After the completion of this course; The Students will be able to the various classification of viruses, their mode of infection, their hosts and how to manage/control their spread in an agricultural system.				
4	<b>Subject aims/Course Contents</b>				

	The nature of virus growth and reproduction. The genetics of viruses. Kinds of inoculum produced. Dissemination, virus diseases of National and International importance. Control measures, quarantine, cultural. Borne infection. Vector-host relationship in arthropod-borne infection. Method in the study of plant viruses.
5	<b>Teaching methods</b> Lectures; practical demonstrations and term paper.
6	<b>Assessment methods</b> Performance in the course will be assessed by a combination of assignments (10%), a Mid Semester Test (15%), a term paper (25%) and a final examination (50%). .
7	<b>This module is used in the following degree programmes as well</b>
8	<b>Responsibility for module</b> Prof. E. I. Ayo-John <a href="mailto:ayojohneifunaab.edu.ng">ayojohneifunaab.edu.ng</a>
9	<b>Other information</b> <b>1. References</b> <b>2. Important Note</b> This course is a 3-unit course based on the credit system in use in Nigeria. It is delivered through 75 hours of class lectures and demonstrations. Students are however, expected to devote about 210 hours to learning of the course content, including participation in 45 hours of course lectures and demonstrations, and 135 hours of self-study (assigned reading, personal studies, assignments, group work and hands-on practice using econometric software to analyse data). Hence, the course is of 7.0 ECTS credit equivalent.