

Description of the EM-SANF Curriculum

The course objective is summarized in Figure 1 below, which illustrates the scientific expertise and scopes that are used in the course to develop the appropriate expertise and competences required to address the societal issues related to animal feeding.

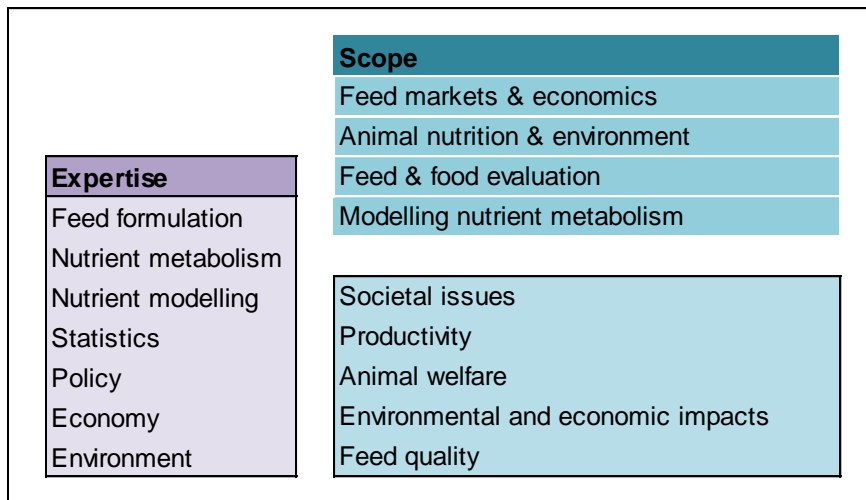


Figure 1. Course objectives.

The EM-SANF course concentrates on the development of **expertise** in the areas of sustainable animal nutrition and feeding. This involves four **scopes**:

- Feed markets & economics
- Animal nutrition & environment
- Feed & food evaluation
- Modelling nutrient metabolism

The EM-SANF course emphasizes on farm animals (ruminants, pigs, and poultry). In the first semester the focus is on animal feed markets and policies (Ecole d'ingénieurs de Purpan, EI Purpan) or on an ecological and nutrient cycling approach in animal feeding (Aarhus University, AU). In the second semester, the focus is on advanced animal nutrition, either dedicated to feed characteristics as related to the ability of the animal to convert these feedstuffs into valuable animal protein (University of Debrecen, UD) or to computer-based mechanistic modelling of nutrient flows in the animal (Wageningen University, WU). The knowledge in these fields can be applied to explore the potential of converting lower value products to high value biological products for human consumption (milk, eggs and meat), maintaining or increasing the efficiency of production, reduce environmental pollution, and improving animal welfare.

The global structure of the EM-SANF is presented in Figure 2 and Table 1, the main characteristics of the course are:

1. The EM-SANF is a 2 year course (120 ETCS) and builds on existing MSc courses at the partner universities.
2. The EM-SANF has three joint activities: introduction programme, summer conference and graduation event.
3. The EM-SANF has compulsory and elective subjects for the development of scientific expertise and complementary skills.
4. Students will perform a thesis and an internship which are conducted under joint supervision from the two host universities of year 1.
5. Currently, EM-SANF is a double-degree course, i.e. you will receive two degrees from each of the universities you studied in year 1. In the coming years, we will work towards a joint degree.

The EM-SANF offers a tailor-made study plan that meets the needs of the individual student. Each EM-SANF student will study for a double degree at two universities, called 'host universities', as appointed in the acceptance letter. The student will spend at least one semester at each of the appointed host universities. Coherence and quality of the study programme are discussed and approved by the mentors of both host universities to ensure that the study plans meets the requirements of both universities to

award their degree. The information about the subjects can be found on the EM-SANF website. The study programme requires approval from the Examining Committee or comparable body of both host universities.

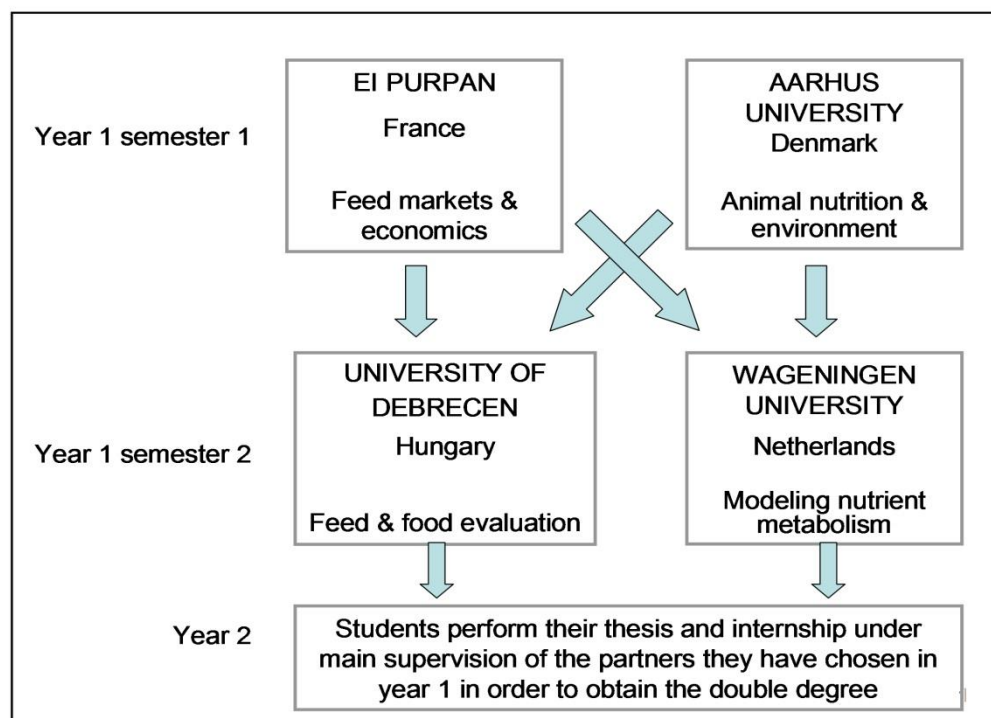


Figure 2. Global structure of EM-SANF MSc Course

Table 1. Global structure of subjects and schedule of EM-SANF MSc Course

What	Aim	Year (%)		ECTS
		1	2	
Joint introduction period	Introduction + academic skills	100		n.a.*
Compulsory subjects	Development of scientific expertise	100		45-48
Elective subjects	Development of scientific expertise in related areas	100		12-15
Joint summer conference	Project presentation and career planning		100	n.a.*
Internship	Getting to know the industry		100	30
Thesis research	Conducting research related to Sustainable Animal Nutrition and Feeding		100	30
Joint graduation event	Presentation of research results		100	n.a.*
Degree from two host universities (year 1)		50	50	120

* n.a. = not available

Introduction period (in August at WU, The Netherlands)

At the opening of the course, all EM-SANF students will attend the joint introduction programme "Welcome to EM-SANF (WtE)" in Wageningen. This WtE introduces students to a European and Global dimension that will complement their existing knowledge of animal nutrition. Furthermore, the WtE pays attention to cultural differences and rights and responsibilities of students and teachers in EM-SANF. The WtE is the cornerstone of the EM-SANF, because it provides students with an invaluable insight into the multi-dimensioned nature of European educational training. The WtE also introduces students to each other and to the staff from all partner universities, introduces the opportunities for specialisation within EM-SANF, and starts discussions between staff and students regarding their choice of optional subjects, thesis and internship. This construction enables students at the beginning of their first year to make a proper, integrated study plan for the entire MSc course.

Compulsory subject (at all universities)

Each host university provides a number of compulsory subjects related to sustainable animal nutrition and feeding in each of the two semesters of year 1. A detailed description of the compulsory subjects is provided on the website (Study programme, Subjects at ..., Contents and activities). The website provides an overview of the scientific expertise and scopes covered by each of the subjects. Each university will recognise the compulsory subjects from the other universities.

Elective subjects

Students can choose from several animal nutrition oriented subjects during the second semester to complete their personal study plan. In the beginning of the second semester, the elective courses will be discussed with the study advisor of the student's host university to assure the subject choices meet the course requirements.

Joint Summer Conference

During the Summer Conference (SC) midterm students present their thesis proposals to the assembled Consortium staff and the just enrolled first year students, as well as to the representatives of industry and associated partners. Scientific staff join the SC and present latest research on topics that fit within the EM-SANF scope. In the SC students learn to present their work and can build a network. Discussion on their thesis proposals with the scientific staff will improve their communication and critical reflection skills.

Internship

The aim of the Internship (IS) is to offer students the opportunity to learn about the needs of national and international organisations and companies in their field and to apply their skills and knowledge. Organizations and companies will be offered the opportunity to formulate assignments for IS, and the student can propose an organisation and assignment for an IS. The internship will be scheduled in the first semester of the second year and comprises 30 ECTS. The assignment, placement, and reporting are agreed upon in advance by the organisation and both degree universities. The organisation is required to provide a mentor for the student during the IS. Besides, the student will have 2 supervisors from both host universities of the students first year.

Thesis research under joint supervision

The thesis research is an important component of the EM-SANF course and consists of research leading to a thesis in the field of sustainable animal nutrition and feeding. The subjects followed in the first year will prepare the student to conduct the thesis research. The thesis will be conducted under the supervision of teaching staff from both degree universities (joint supervision). The research plan must be approved by both universities awarding the degrees, the research must be conducted under dual supervision, and examiners from both universities must be involved in the final examination of the thesis. Video conferencing, e-mail, and Skype should be used to facilitate dual supervision and to enhance contacts between partners.

Degree

Currently, EM-SANF is a double degree course. All successful students (European and third-country) will obtain a MSc degree from each of the host universities (year 1 universities). This type of delivery, two single MSc degrees in a 2 years course, is called a 'double degree'. The title of the degree awarded by each partner is listed in Table 2. A summary of the study tracks and degrees obtained within each track are listed in Table 3. Moreover, students will receive an EM-SANF certificate indicating that they joined this prestigious course successfully. Each participating university has implemented the European Bachelor and Master degree structure according to the Bologna model.

Table 2. Type and title of degrees obtained by the partner universities in the EM-SANF MSc Course.

Name of institution	Title of degree awarded for this Masters Course by this institution
Aarhus University	MSc in Sustainable Animal Nutrition and Feeding
Ecole d'Ingénieurs de Purpan	MSc European Animal Management
University of Debrecen	MSc in Sustainable Animal Nutrition and Feeding
Wageningen University	Master of Science in Animal Sciences (MAS)

Table 3. Summary of the four different study tracks and degrees to be obtained by the students after completing the EM-SANF MSc course.

Semester (year)	Track 1	Track 2	Track 3	Track 4
S1 (1)	EIP	EIP	AU	AU
S2 (1)	UD	WU	UD	WU
S3 (2)	Internship under co-supervision of the universities from the track in year 1			
S4 (2)	Thesis under co-supervision of the universities from the track in year 1			
Single degrees awarded from	EIP + UD	EIP + WU	AU + UD	AU + WU