# Biotechnical Faculty / TECHNOLOGIES IN ANIMAL HUSBANDRY / NUTRITION OF MILKING ANIMALS

| **Course:** | NUTRITION OF MILKING ANIMALS | | | |
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| **Course ID** | **Course status** | **Semester** | **ECTS credits** | **Lessons** (Lessons+Exercises+Laboratory) |
| 13389 | Optional | 3 | 6 | 3+1+0 |
| **Programs** | TECHNOLOGIES IN ANIMAL HUSBANDRY | | | |
| **Prerequisites** | - | | | |
| **Aims** | The course should enable students to gain knowledge / understanding of the latest achievements in production, canning and processing of food and nutrition of dairy cows, gaining skills to solve current problems in nutrition, creating a diet program and meal evaluation, as well as possible commitment to masters thesis. | | | |
| **Learning outcomes** | Development of creative abilities and mastering specific and practical skills in the field of knowledge of energy and protein value of nutrients, assessment of efficiency of meal utilization and ability to compose meals in accordance with modern market norms and requirements, using current models and software solutions. | | | |
| **Lecturer / Teaching assistant** | prof. dr Nenad Đorđević, dr Dušica Radonjić. | | | |
| **Methodology** | Theoretical lectures, presentations of individual examples, seminar papers | | | |
| **Plan and program of work** | | | | |
| Preparing week | Preparation and registration of the semester | | | |
| I week lectures | Modern methods, systems and models for estimating the nutritional value of cow feed | | | |
| I week exercises | Necessary chemical analyzes of cow feed according to NRC 2001 | | | |
| II week lectures | Physical parameters of feed and feed quality for cows | | | |
| II week exercises | Determining the optimal particle distribution of voluminose nutrients and the complete meal | | | |
| III week lectures | The latest achievements in the production of cow feed | | | |
| III week exercises | Determination of aerobic stability of silage | | | |
| IV week lectures | Modern additives in cow nutrition | | | |
| IV week exercises | Determination of anion and cation balance in a cows diet | | | |
| V week lectures | Accurate and efficient protein and energy nutrition of cows | | | |
| V week exercises | Use of CNCPS system for protein and carbohydrate fractionation | | | |
| VI week lectures | Repetition and presentation of seminar papers | | | |
| VI week exercises | Making calculations and tasks from the areas covered | | | |
| VII week lectures | Test and colloquium I | | | |
| VII week exercises | Test and colloquium I | | | |
| VIII week lectures | Modern approach to mineral and vitamin nutrition of cows | | | |
| VIII week exercises | Compilation of mineral-vitamin premixes for cows | | | |
| IX week lectures | Modern normatives for cow nutrition | | | |
| IX week exercises | Cow nutrition according to NRC, CNCPS, CVB, AFRC, FIM, INRA, DVE / OEB, NorFor, Rostock | | | |
| X week lectures | Modern approach and software solutions in cow nutrition | | | |
| X week exercises | Application of NRC 2001 in practice | | | |
| XI week lectures | Cow nutrition in organic milk production systems | | | |
| XI week exercises | Legislation of organic cattle production | | | |
| XII week lectures | Influence of diet on reproduction, production and chemical parameters of milk | | | |
| XII week exercises | Body condition scoring of cows | | | |
| XIII week lectures | Influence of diet on cow metabolism | | | |
| XIII week exercises | Metabolic profile of cows | | | |

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| XIV week lectures | Repetition and presentation of seminar papers |
| XIV week exercises | Making calculations and tasks from the areas covered |
| XV week lectures | Test and colloquium II |
| XV week exercises | Test and colloquium II |
| **Student workload** | Weekly 3 +1 6 credits x 40/30 = 8 hours structure: 3 hours of lectures 1 hour of exercises, 4 hours of individual student work, including consultations During semester: Classes and final exam: 8 hours x 16 weeks = 128 hours Necessary preparations before the beginning of the semester (administration, enrollment, certification) 2 x 8 hours = 16 hours Total workload for the course: 6x 30 = 180 hours Supplementary work for exam preparation in the remedial period, including taking a remedial exam from 0 to 36 hours Load structure: 128 hours (teaching), 16 hours (preparation) and 36 hours (supplementary work) |

| **Per week** | **Per semester** |
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| **6 credits x 40/30=8 hours and 0 minuts**<br>3 sat(a) theoretical classes<br>0 sat(a) practical classes<br>1 excercises<br>**4 hour(s) i 0 minuts**<br>of independent work, including consultations | Classes and final exam:<br>**8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts**<br>Necessary preparation before the beginning of the semester (administration, registration, certification):<br>**8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts**<br>Total workload for the subject:<br>**6 x 30=180 hour(s)**<br>Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item)<br>**36 hour(s) i 0 minuts**<br>Workload structure: **128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)** |
| **Student obligations** | Attends lectures, exercises, seminar papers |
| **Consultations** | Once a week, for an hour in agreement with the students after the lecture |
| **Literature** | Grubić, G., Adamović, M. (2003). Nutrition of high-yielding cows. (Second, revised edition). Publisher: PKB Agroekonomik Institute, Belgrade. NRC (2001). Nutrient Requirements of Dairy Cattle. 7th Revised Edition. National Academy Press. Washington DC Fox, D. G., Tylutki, T. P., Tedeschi, L.O., Van Amburgh, M. E., Chase, L. E., Pell, A. N., Overton, T. R., Russell, J. B. (2003): The net carbohydrate and protein system for evaluating herd nutrition and nutrient excretion. The Cornell University, New York. Rostock Feed Evaluation System (2003). Reference numbers of feed value and requirement on the base of net energy 2003. Research Institute for the Biology of Farm Animals, Research Unit Nutritional Physiology „Oskar Kellner“ Dummerstorf, Germany. Plexus Verlag, Miltenberg-Frankfurt. Božičković, A., Grubić, G., Stojanović, B. (2018): Practicum for ruminant nutrition. University of Belgrade, Faculty of Agriculture. Journal of Dairy Science and other journals in this field, as well as material to be distributed in class. |
| **Examination methods** | seminar papers - 30 points, colloquia - 2 x10 points, final exam - 40 points and attendance and activity in classes - 10 points. Grade: number of points: A (≥ 90 to 100 points); B (≥ 80 to < 90); C (≥ 70 to < 80); D (≥ 60 to < 70); E (≥ 50 to < 60); F < of 50 |
| **Special remarks** | |
| **Comment** | |

| **Grade:** | F | E | D | C | B | A |
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| **Number of points** | less than 50 points | greater than or equal to 50 points and less than 60 points | greater than or equal to 60 points and less than 70 points | greater than or equal to 70 points and less than 80 points | greater than or equal to 80 points and less than 90 points | greater than or equal to 90 points |