**TRAINING PROGRAM IN DISCIPLINE:**

**Food technology and nutrition**

* 1. Category I - *core curriculum*
     1. Basic information

*Domain: Agricultural Sciences*  
*Discipline: Food Technology and Nutrition*

*Degree awarded: PhD on Food Technology and Nutrition in Agricultural Sciences*

*Program Coordinator:*

*Name: dr hab. inż. Alina Kunicka-Styczyńska, prof. PŁ*

*Institute: Institute of Fermentation Technology And Microbiology*

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* + 1. Lecturers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Name and surname | Title/degree | Departament/Institute | Website/ORCID |
| 1 | Aneta Białkowska | Dr hab. inż. | Institute of Technical Biochemistry |  |
| 2 | Stanisław Bielecki | Prof. dr hab. inż. | Institute of Technical Biochemistry |  |
| 3 | Grażyna Budryn | Dr hab. inż., prof. PŁ | Institute of Food Technology and Analysis |  |
| 4 | Katarzyna Dems-Rudnicka | Dr inż. | Center for Teaching Mathematics and Physics |  |
| 5 | Anna Diowksz | Dr hab. inż. | Institute of Fermentation Technology And Microbiology |  |
| 6 | Katarzyna Dybka-Stępień | Dr inż. | Institute of Fermentation Technology And Microbiology |  |
| 7 | Urszula Dziekońska | Dr inż. | Institute of Fermentation Technology And Microbiology |  |
| 8 | Edyta Gendaszewska-Darmach | Dr hab. inż. prof. PŁ | Institute of Technical Biochemistry |  |
| 9 | Beata Gutarowska | Prof. dr hab. | Institute of Fermentation Technology And Microbiology |  |
| 10 | Edyta Kordialik-Bogacka | Dr hab. inż. | Institute of Fermentation Technology And Microbiology |  |
| 11 | Monika Kosmala | Dr hab. inż. | Institute of Food Technology and Analysis |  |
| 12 | Katarzyna Kubiak | Dr inż. | Institute of Technical Biochemistry |  |
| 13 | Alina Kunicka-Styczyńska | Dr hab. inż., prof. PŁ | Institute of Fermentation Technology And Microbiology |  |
| 14 | Karolina Ludwicka | Dr inż. | Institute of Technical Biochemistry |  |
| 15 | Iwona Majak | Dr inż. | Institute of Food Technology and Analysis |  |
| 16 | Anna Otlewska | Dr inż. | Institute of Fermentation Technology And Microbiology |  |
| 17 | Anna Podsędek | Dr hab. inż. | Institute of Technical Biochemistry |  |
| 18 | Agnieszka Pietrzyk-Brzezińska | Dr inż. | Institute of Technical Biochemistry |  |
| 19 | Katarzyna Rajkowska | Dr hab. | Institute of Fermentation Technology And Microbiology |  |
| 20 | Małgorzta Redzynia | Dr inż. | Institute of Technical Biochemistry |  |
| 21 | Elżbieta Sobiecka | Dr hab. inż., prof. PŁ | Institute of General Food Chemistry |  |
| 22 | Katarzyna Śliżewska | Dr hab. inż., prof. PŁ | Institute of Fermentation Technology And Microbiology |  |
| 23 | Agnieszka Wilkowska | Dr inż. | Institute of Fermentation Technology And Microbiology |  |
| 24 | Małgorzata Zakłos-Szyda | Dr inż. | Institute of Technical Biochemistry |  |
| 25 | Dorota Żyżelewicz | Dr hab. inż., prof. PŁ | Institute of Food Technology and Analysis |  |

* + 1. Training demand

The Doctoral School in Food Technology and Nutrition at Lodz University of Technology has a mission to multiply and disseminate knowledge, aiming at educating highly qualified staff for the needs of the economy and administration. The primary goal is to educate graduates with interdisciplinary knowledge who can use it in both research and practice. Another goal is to teach graduates the ability to present and publish results of their research and to defend their research theories. The DS graduates after obtaining the degree of doctor of agricultural sciences in the discipline of food and nutrition technology, due to the interdisciplinary nature and multi-directional education program have extensive knowledge related not only to the basic discipline, but also broadly understood biotechnology and chemical engineering.

* + 1. Detailed entry requirements

A formal requirement for candidates for studies at DS is the completion of master's studies in food and nutrition technology or chemical engineering or other related fields. In addition, the candidates should demonstrate the ability to work independently, the ability to acquire and apply knowledge in various fields, as well as demonstrate predispositions for objective analysis and evaluation of collected observations and research results.

* + 1. Teaching methods

Lectures, classes, laboratories, projects, scientific seminars

* + 1. Graduate’s profile

The graduates know and understand world scientific and creative achievements and practical implications resulting from them. They are able to analyze and creatively synthesize scientific and creative achievements in order to identify and solve research problems and issues related to innovative and creative activities as well as to contribute new elements to these achievements. The graduates can consciously and independently plan their development and inspire the development of other people and participate in the exchange of experiences and ideas in the national and international environment. They are ready to undertake independent studies enlarging the existing scientific and creative achievements, taking up challenges in the professional and public sphere, taking into account their ethical dimension and responsibility for their effects and shaping patterns of proper behavior in such situations. Graduates will find employment at domestic and foreign universities as well as in research and development centers as researchers and scientists. They will be highly qualified staff of modern enterprises that implement production processes using waste-free innovative technologies in areas such as biotechnology, agri-food, cosmetics and pharmaceutical industries. They can also modify, evaluate and consult new technological and product solutions in terms of their efficiency, profitability and innovation – also in the wider context of a sustainable and low-carbon circular economy.

* + 1. Learning outcomes matrix

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CC1** | **CC2** | **CC3** | **CC4** | **E** | **CC5** | **CC6** | **CC7** | **CC8** | **S** | EC1  EC6  EC13 | EC2 | EC3  EC9 | EC4  EC7  EC10  EC15  EC16  EC17 | EC5  EC8  EC11  EC12 | EC14 |
|  | | | | | | | | | | | | | | | | |
| ***W1*** | + | + | + | + |  | + | + | + | + |  | + | + | + | + | + | + |
| ***W2*** |  |  |  | + |  |  |  | + | + |  |  | + |  |  | + |  |
|  | | | | | | | | | | | | | | | | |
| ***U1*** | + | + | + | + |  | + | + | + | + |  | + | + | + | + | + | + |
| ***U2*** |  | + | + |  |  |  |  | + | + |  | + | + | + | + | + | + |
| ***U3*** | + | + |  | + |  | + | + | + | + |  | + |  | + |  | + |  |
| ***U4*** |  |  |  |  |  |  |  |  | + |  |  |  |  |  | + | + |
|  | | | | | | | | | | | | | | | | |
| ***K1*** |  | + |  | + |  |  | + | + | + |  | + | + | + | + | + | + |
| ***K2*** |  |  |  |  |  |  |  | + | + |  |  |  |  |  | + |  |
| ***K3*** |  |  |  |  |  |  |  |  | + |  |  |  | + | + |  |  |

* + 1. Education plan - list of subjects (example)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Semester 1 | | | | | | | | | | | | |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Comments |
| L | T | L | P | S | Σ |
| 1 | CC1 | Modern trends in food technology I | 5 |  | 10 |  |  | 15 |  | 1 |  |  |
| 2 | CC2 | Phytocompounds as bioactive food ingredients |  |  | 15 |  |  | 15 |  | 1 |  |  |
| 3 | E |  |  |  |  |  |  |  |  |  |  |  |
| Total | | |  |  |  |  |  |  |  |  |  |  |
| Semester 2 | | | | | | | | | | | | |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Comments |
| L | T | L | P | S | Σ |
| 1 | CC3 | The role of phytocomponents in the prevention of civilization diseases | 15 |  |  |  |  | 15 | Exam | 1 |  |  |
| 2 | CC4 | Advances in fermented food and beverages I | 5 |  | 10 |  |  | 15 |  | 1 |  |  |
| 3 | S |  |  |  |  |  |  |  |  |  |  |  |
| Total | | |  |  |  |  |  |  |  |  |  |  |
| Semester 3 | | | | | | | | | | | | |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Comments |
| L | T | L | P | S | Σ |
| 1 | CC5 | Modern trends in food technology II | 5 |  | 10 |  |  | 15 |  | 1 |  |  |
| 2 | CC6 | Biocatalysis | 15 |  |  |  |  | 15 |  | 1 |  |  |
| 3 | S |  |  |  |  |  |  |  |  |  |  |  |
| Total | | |  |  |  |  |  |  |  |  |  |  |
| Semester 4 | | | | | | | | | | | | |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Comments |
| L | T | L | P | S | Σ |
| 1 | CC7 | Modern microbiological analysis in food industry | 8 |  | 7 |  |  | 15 | Exam | 1 |  |  |
| 2 | CC8 | Advances in fermented food and beverages II |  |  |  | 15 |  | 15 |  | 1 |  |  |
| 3 | S |  |  |  |  |  |  |  |  |  |  |  |
| Total | | |  |  |  |  |  |  |  |  |  |  |
| **MIDTERM EVALUATION** | | | | | | | | | | | | |
| Semester 5 | | | | | | | | | | | | |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Comments |
| L | T | L | P | S | Σ |
| 1 | S |  |  |  |  |  |  |  |  |  |  |  |
| Total | | |  |  |  |  |  |  |  |  |  |  |
| Semester 6 | | | | | | | | | | | | |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Comments |
| L | T | L | P | S | Σ |
| 1 | S |  |  |  |  |  |  |  |  |  |  |  |
| Total | | |  |  |  |  |  |  |  |  |  |  |
| Semester 7 | | | | | | | | | | | | |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Comments |
| L | T | L | P | S | Σ |
| 1 | S |  |  |  |  |  |  |  |  |  |  |  |
| Total | | |  |  |  |  |  |  |  |  |  |  |
| Semester 8 | | | | | | | | | | | | |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Comments |
| L | T | L | P | S | Σ |
| 1 | S |  |  |  |  |  |  |  |  |  |  |  |
| Total | | |  |  |  |  |  |  |  |  |  |  |
| **TOTAL** | | |  |  |  |  |  |  |  |  |  |  |

* 1. Category II - *research skills & workshop*
     1. Elective courses - list of subjects[[1]](#footnote-2)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Subcategory | Subject |  | | | | | | Assesment method | ECTS | Code | Semester  Winter/summer |
| L | T | L | P | S | Σ |
| 1 | EC1 | Consortia of microorganisms in food and beverages environments | 5 |  | 10 |  |  | 15 |  | 1 |  | Summer |
| 2 | EC2 | Enzymatic biofunctionalization of natural and synthetic polymers | 15 |  |  |  |  | 15 |  | 1 |  | Winter |
| 3 | EC3 | Structural Biochemistry | 5 |  |  | 8 | 2 | 15 |  | 1 |  | Winter |
| 4 | EC4 | Protein Crystallography | 7 |  | 8 |  |  | 15 |  | 1 |  | Summer |
| 5 | EC5 | Industrial ecology and resource recovery | 5 |  |  | 10 |  | 15 |  | 1 |  | Winter |
| 6 | EC6 | Engineered Immunoglobulins as Biotechnological Tools | 8 |  |  | 7 |  | 15 |  | 1 |  | Winter |
| 7 | EC7 | Advanced techniques in molecular biology | 5 |  |  |  | 10 | 15 |  | 1 |  | Winter |
| 8 | EC8 | Natural compounds in food preservation | 10 |  | 5 |  |  | 15 |  | 1 |  | Winter |
| 9 | EC9 | Food and immunity | 5 | 5 | 5 |  |  | 15 |  | 1 |  | Summer |
| 10 | EC10 | Advances in DNA sequencing methods | 5 |  | 10 |  |  | 15 |  | 1 |  | Summer |
| 11 | EC11 | Strategies and stages of developing new natural and synthetic therapeutics I | 10 |  |  | 5 |  | 15 |  | 1 |  | Summer |
| 12 | EC12 | Strategies and stages of developing new natural and synthetic therapeutics II | 5 |  |  | 10 |  | 15 |  | 1 |  | Summer |
| 13 | EC13 | Molecular Enzyme Engineering | 10 |  |  | 5 |  | 15 |  | 1 |  | Summer |
| 14 | EC14 | Trends in Biodeterioration | 12 |  |  |  | 3 | 15 |  | 1 |  | Winter |
| 15 | EC15 | Design and Optimization of Experiment |  |  | 15 |  |  | 15 |  | 1 |  | Summer |
| 16 | EC16 | Statistics in Applications I |  |  | 15 |  |  | 15 |  | 1 |  | Summer |
| 17 | EC17 | Statistics in Applications II |  |  | 15 |  |  | 15 |  | 1 |  | Summer |

2.1. Visiting professors’ lectures - list of lectures[[2]](#footnote-3)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Subcategory | Subject |  | | | | | | Assesment method | ECTS | Code | Semester  Winter/summer |
| L | T | L | P | S | Σ |
| 1 | VP1 | Biotechnology and Food Safety: Interdisciplinary roles of biosciences and chemical and mechanical engineering | 15 | 15 |  | 30 |  | 60 |  |  |  | Summer |
| 2 | VP2 |  |  |  |  |  |  |  |  |  |  |  |
| 3 | VP3 |  |  |  |  |  |  |  |  |  |  |  |

* + 1. Soft & transferable skills - list of subjects[[3]](#footnote-4)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Subcategory | Subject |  | | | | | | Assessment method | ECTS | Code | Semester  Winter/summer |
| L | T | L | P | S | Σ |
| 1 | ST1 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | ST2 |  |  |  |  |  |  |  |  |  |  |  |
| 3 | ST3 |  |  |  |  |  |  |  |  |  |  |  |

1. W tym filozofia, dydaktyka, etyka naukowa itd. [↑](#footnote-ref-2)
2. Do wypełnienia opcjonalnie teraz, jeśli w danej jednostce są regularne wykłady lub później jak będzie wiadomo jaki prowadzący i jaki przedmiot [↑](#footnote-ref-3)
3. które jednostka może zaoferować, w tym **przedsiębiorczość** [↑](#footnote-ref-4)