



| 1   | 2                  | 3                                                                                   | 4                    | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  |
|-----|--------------------|-------------------------------------------------------------------------------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| II  | 14                 | Biochemia strukturalna                                                              | wykład               | E   | --- | --- | 5   | 45  | --- | --- | --- | --- | --- | --- | --- | --- |
|     | 15                 | Biochemia strukturalna-<br>ćwiczenia                                                | lab.                 | Z   | --- | --- | 4   | 60  | --- | --- | --- | --- | --- | --- | --- | --- |
|     | 16                 | Chemia organiczna                                                                   | wykład               | E   | --- | --- | 4   | 30  | --- | --- | --- | --- | --- | --- | --- | --- |
|     | 17                 | Chemia organiczna-ćwiczenia                                                         | lab.                 | Z   | --- | --- | 3   | 45  | --- | --- | --- | --- | --- | --- | --- | --- |
|     | 18                 | Informatyka                                                                         | ćw. komp.            | Z   | --- | --- | 2   | 30  | --- | --- | --- | --- | --- | --- | --- | --- |
|     | 19                 | MODUŁ: Statystyka w analizie i<br>planowaniu eksperymentu                           | wykład               | E   | --- | --- | 4   | 30  | --- | --- | --- | --- | --- | --- | --- | --- |
|     |                    |                                                                                     | ćw. komp.            | Z   | --- | --- | 2   | 30  | --- | --- | --- | --- | --- | --- | --- | --- |
|     | 20                 | WF <sup>#</sup>                                                                     | ćw.                  | Z   | --- | --- | --- | 30# | --- | --- | --- | --- | --- | --- | --- | --- |
|     | zajęcia do wyboru: |                                                                                     |                      |     | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|     | 21                 | wykład do wyboru <sup>1)</sup>                                                      | wykład <sup>1)</sup> | Z   | --- | --- | 2   | 15  | --- | --- | --- | --- | --- | --- | --- | --- |
|     |                    |                                                                                     |                      | 3 E | --- | --- | 26  | 285 |     |     |     |     |     |     |     |     |
| 1   | 2                  | 3                                                                                   | 4                    | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  |
| III | 22                 | Metabolizm                                                                          | wykład               | E   | --- | --- | --- | --- | 5   | 45  | --- | --- | --- | --- | --- | --- |
|     | 23                 | Metabolizm białek i cukrów-<br>ćwiczenia                                            | lab.                 | Z   | --- | --- | --- | --- | 3   | 40  | --- | --- | --- | --- | --- | --- |
|     | 24                 | Metabolizm lipidów-ćwiczenia                                                        | lab.                 | Z   | --- | --- | --- | --- | 2   | 25  | --- | --- | --- | --- | --- | --- |
|     | 25                 | Chemia biofizyczna                                                                  | wykład               | E   | --- | --- | --- | --- | 4   | 30  | --- | --- | --- | --- | --- | --- |
|     | 26                 | Chemia biofizyczna-ćwiczenia                                                        | lab.+ćw.             | Z   | --- | --- | --- | --- | 3   | 30  | --- | --- | --- | --- | --- | --- |
|     | 27                 | Genetyka                                                                            | wykład               | E   | --- | --- | --- | --- | 3   | 30  | --- | --- | --- | --- | --- | --- |
|     | 28                 | Genetyka-ćwiczenia                                                                  | lab.                 | Z   | --- | --- | --- | --- | 2   | 30  | --- | --- | --- | --- | --- | --- |
|     | 29                 | WF <sup>#</sup>                                                                     | ćw.                  | Z   | --- | --- | --- | --- | --- | 30# | --- | --- | --- | --- | --- | --- |
|     | zajęcia do wyboru: |                                                                                     |                      |     | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|     | 30                 | MODUŁ:<br>Bioinformatyka i bazy danych<br>Bioinformatyka z modelo-<br>waniem białek | wykład               | Z   | --- | --- | --- | --- | 2   | 15  | --- | --- | --- | --- | --- | --- |
|     |                    |                                                                                     | ćw. komp.            | Z   | --- | --- | --- | --- | 2   | 30  | --- | --- | --- | --- | --- | --- |
|     | 31                 | Metabolizm zwierząt<br>Metabolizm mikroorg. <sup>2)</sup>                           | wykład               | Z   | --- | --- | --- | --- | 2   | 15  | --- | --- | --- | --- | --- | --- |
|     |                    |                                                                                     |                      | 3E  | --- | --- | --- | --- | 28  | 290 | --- | --- | --- | --- | --- | --- |

## IV

| 1 | 2                  | 3                                                                                                             | 4                    | 5  | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  |
|---|--------------------|---------------------------------------------------------------------------------------------------------------|----------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|   | 32                 | Mikrobiologia                                                                                                 | wykład               | E  | --- | --- | --- | --- | --- | --- | 3   | 30  | --- | --- | --- | --- |
|   | 33                 | Mikrobiologia-ćwiczenia                                                                                       | lab.                 | Z  | --- | --- | --- | --- | --- | --- | 2   | 30  | --- | --- | --- | --- |
|   | 34                 | Podstawy przedsiębiorczości                                                                                   | wykład               | Z  | --- | --- | --- | --- | --- | --- | 2   | 15  | --- | --- | --- | --- |
|   | 35                 | Techniki biologii molekularnej                                                                                | wykład               | Z  | --- | --- | --- | --- | --- | --- | 2   | 15  | --- | --- | --- | --- |
|   | 36                 | Techniki biologii molekularnej-ćwiczenia                                                                      | lab.                 | Z  | --- | --- | --- | --- | --- | --- | 3   | 45  | --- | --- | --- | --- |
|   | 37                 | Zasady prezentacji wyników naukowych                                                                          | ćw.                  | Z  | --- | --- | --- | --- | --- | --- | 3   | 30  | --- | --- | --- | --- |
|   | zajęcia do wyboru: |                                                                                                               |                      |    | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | 38                 | Fizjologia roślin<br>Fizjologia zwierząt <sup>2)</sup>                                                        | wykład               | E  | --- | --- | --- | --- | --- | --- | 3   | 30  | --- | --- | --- | --- |
|   | 39                 | Biofizyka z el. biofizyki medycznej<br>Biofizyka z el. bioenergetyki <sup>2)</sup>                            | wykład               | E  | --- | --- | --- | --- | --- | --- | 3   | 30  | --- | --- | --- | --- |
|   | 40                 | Biofizyka z el. biofizyki medycznej-ćwiczenia<br>Biofizyka z el. bioenergetyki-ćwiczenia <sup>2)</sup>        | lab.                 | Z  | --- | --- | --- | --- | --- | --- | 2   | 30  | --- | --- | --- | --- |
|   | 41                 | Hodowle komórek i tkanek roślinnych<br>Hodowle komórek i tkanek zwierzęcych <sup>2)</sup>                     | wykład               | Z  | --- | --- | --- | --- | --- | --- | 2   | 15  | --- | --- | --- | --- |
|   | 42                 | Hodowle komórek i tkanek roślinnych-ćwiczenia<br>Hodowle komórek i tkanek zwierzęcych-ćwiczenia <sup>2)</sup> | lab.                 | Z  | --- | --- | --- | --- | --- | --- | 2   | 30  | --- | --- | --- | --- |
|   | 43                 | Seminarium w j. ang.1)                                                                                        | sem.                 | Z  | --- | --- | --- | --- | --- | --- | 3   | 15  | --- | --- | --- | --- |
|   | 44                 | wykład do wyboru <sup>1)</sup>                                                                                | wykład <sup>1)</sup> | Z  | --- | --- | --- | --- | --- | --- | 2   | 15  | --- | --- | --- | --- |
|   | 45                 | j. polski dla cudzoziemców <sup>%</sup>                                                                       | lektorat             | E  | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   |                    |                                                                                                               |                      | 3E | --- | --- | --- | --- | --- | --- | 32  | 330 | --- | --- | --- | --- |

| 1 | 2                  | 3                                                                                                                       | 4                    | 5  | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  |
|---|--------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| V | 46                 | Molekularna organizacja komórki                                                                                         | wykład               | E  | --- | --- | --- | --- | --- | --- | --- | --- | 4   | 30  | --- | --- |
|   | 47                 | Molekularna organizacja komórki-ćwiczenia                                                                               | lab.                 | Z  | --- | --- | --- | --- | --- | --- | --- | --- | 3   | 45  | --- | --- |
|   | 48                 | Inżynieria genetyczna                                                                                                   | wykład               | E  | --- | --- | --- | --- | --- | --- | --- | --- | 3   | 30  | --- | --- |
|   | 49                 | Inżynieria genetyczna-ćwiczenia                                                                                         | lab.                 | Z  | --- | --- | --- | --- | --- | --- | --- | --- | 2   | 30  | --- | --- |
|   | 50                 | Preparatyka biochemiczna                                                                                                | wykład               | E  | --- | --- | --- | --- | --- | --- | --- | --- | 3   | 30  | --- | --- |
|   | 51                 | Preparatyka biochemiczna-ćwiczenia                                                                                      | lab.                 | Z  | --- | --- | --- | --- | --- | --- | --- | --- | 2   | 30  | --- | --- |
|   | 52                 | Bioetyka                                                                                                                | wykład               | Z  | --- | --- | --- | --- | --- | --- | --- | --- | 2   | 15  | --- | --- |
|   | zajęcia do wyboru: |                                                                                                                         |                      |    | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | 53                 | Biotechnologia z el. biotech. medycznej<br>Biotechnologia z el. biotech. przemysłowej <sup>2)</sup>                     | wykład               | E  | --- | --- | --- | --- | --- | --- | --- | --- | 4   | 30  | --- | --- |
|   | 54                 | Biotechnologia z el. biotech. medycznej-ćwiczenia<br>Biotechnologia z el. biotech. Przemysłowej-ćwiczenia <sup>2)</sup> | lab.                 | Z  | --- | --- | --- | --- | --- | --- | --- | --- | 3   | 45  | --- | --- |
|   | 55                 | Seminarium w j. angielskim <sup>1)</sup>                                                                                | sem.                 | Z  | --- | --- | --- | --- | --- | --- | --- | --- | 4   | 30  | --- | --- |
|   | 56                 | wykład do wyboru <sup>1)</sup>                                                                                          | wykład <sup>1)</sup> | Z  | --- | --- | --- | --- | --- | --- | --- | --- | 2   | 15  | --- | --- |
|   |                    |                                                                                                                         |                      | 4E | --- | --- | --- | --- | --- | --- | --- | --- | 32  | 330 | --- | --- |

| 1                                                            | 2                                       | 3                                                                             | 4                    | 5  | 6    | 7       | 8    | 9       | 10   | 11      | 12   | 13      | 14   | 15      | 16   | 17      |    |
|--------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------|----------------------|----|------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|----|
| VI                                                           | 57                                      | Enzymologia                                                                   | wykład               | E  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | 3    | 30      |    |
|                                                              | 58                                      | Enzymologia-ćwiczenia                                                         | lab.                 | Z  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | 3    | 45      |    |
|                                                              | 59                                      | Immunologia                                                                   | wykład               | E  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | 3    | 30      |    |
|                                                              | 60                                      | Immunologia-ćwiczenia                                                         | lab.                 | Z  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | 2    | 30      |    |
|                                                              | 61                                      | Biogospodarka                                                                 | ćw.                  | Z  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | 2    | 15      |    |
|                                                              | 62                                      | Ochrona własności intelektualnej                                              | wykład               | Z  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | 2    | 15      |    |
|                                                              | zajęcia do wyboru:                      |                                                                               |                      |    | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     |    |
|                                                              | 63                                      | Biotechnologia farmaceutyczna Bioinżynieria <sup>2)</sup>                     | wykład               | E  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | 3       | 30 |
|                                                              | 64                                      | Biotechnologia farmaceutyczna-ćwiczenia Bioinżynieria-ćwiczenia <sup>2)</sup> | lab.                 | Z  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | 2       | 15 |
|                                                              | 65                                      | wykład do wyboru <sup>1)</sup>                                                | wykład <sup>1)</sup> | Z  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | 2       | 15 |
|                                                              | 66                                      | Seminarium licencjackie                                                       | sem.                 | Z  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | 3       | 30 |
|                                                              | 67                                      | Konwersatorium licencjackie                                                   | sem.                 | Z  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | 12      | 5  |
|                                                              |                                         |                                                                               |                      | 3E |      |         |      |         |      |         |      |         |      | 37      | 260  |         |    |
|                                                              | j. polski dla cudzoziemców <sup>%</sup> |                                                                               | lektorat             | E  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | 8    | 120     |    |
|                                                              | j. angielski*                           |                                                                               | lektorat             | E  | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | ---  | ---     | 12   | 180     |    |
|                                                              |                                         |                                                                               |                      |    | ECTS | godziny | ECTS | godziny | ECTS | godziny | ECTS | godziny | ECTS | godziny | ECTS | godziny |    |
|                                                              |                                         |                                                                               |                      |    | 25   | 250     | 26   | 285     | 28   | 290     | 32   | 330     | 32   | 330     | 37   | 260     |    |
| RAZEM z wyłączeniem lektoratów i w-f:                        |                                         |                                                                               |                      |    |      |         |      |         |      |         |      |         |      |         | 180  | 1745    |    |
| RAZEM z j. angielskim (12 ECTS, 180 godz.) i w-f (60 godz.): |                                         |                                                                               |                      |    |      |         |      |         |      |         |      |         |      |         | 192  | 1985    |    |
| RAZEM z j. polskim dla cudzoziemców (8 ECTS, 120 godz.):     |                                         |                                                                               |                      |    |      |         |      |         |      |         |      |         |      |         | 200  | 2105    |    |

\* j. angielski - 180 godzin do wykorzystania (60 godz./semestr); 12 ECTS przyznawane za osiągnięcie poziomu B2 II z j. angielskiego, dopisywane na koniec studiów.

% j. polski dla cudzoziemców- 120 godzin do wykorzystania do sem. IV; 8 ECTS przyznawane za osiągnięcie poziomu B2

# WF - obowiązują 2 semestry zajęć z WF

1) wybór spośród przynajmniej dwóch opcji (tematów); w ramach wykładów do wyboru zajęcia mogą mieć również formę konwersatoriów lub ćwiczeń. Lista dostępnych zajęć jest ogłaszana przed rozpoczęciem semestru

2) przedmiot ograniczonego wyboru; student wybiera wykład lub zestaw wykład i ćwiczenia spośród wymienionych opcji

|                                                                                                     | I sem. |         | II sem. |         | III sem. |         | IV sem. |         | V sem. |         | VI sem. |         | RAZEM |         |
|-----------------------------------------------------------------------------------------------------|--------|---------|---------|---------|----------|---------|---------|---------|--------|---------|---------|---------|-------|---------|
|                                                                                                     | ECTS   | godziny | ECTS    | godziny | ECTS     | godziny | ECTS    | godziny | ECTS   | godziny | ECTS    | godziny | ECTS  | godziny |
| SUMA - zajęcia do wyboru<br>(do uzyskania przez studenta)                                           | 4      | 30      | 2       | 15      | 6        | 60      | 17      | 165     | 13     | 120     | 22      | 95      | 64    | 485     |
| SUMA - zajęcia z dziedziny nauk<br>humanistycznych lub społecznych<br>(do uzyskania przez studenta) | 0      | 0       | 0       | 0       | 0        | 0       | 2       | 15      | 2      | 15      | 2       | 15      | 6     | 45      |