

ASTRONOMIA, STUDIA I STOPNIA, TOK B – PLAN STUDIÓW DLA CYKLU KSZTAŁCENIA 2021-2024

| NAZWA PRZEDMIOTU                             | EGZ/ZAL<br>(semestr) | łączny<br>wymiar<br>godz. | WYK | K/ĆW | LAB | SEM | ECTS | LICZBA GODZIN ZAJĘĆ W TYGODNIU |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
|----------------------------------------------|----------------------|---------------------------|-----|------|-----|-----|------|--------------------------------|------|-----|-----|------|-----------|------|-----|-----|------|-----------|------|-----|-----|------|-----------|------|-----|-----|------|-----------|------|-----|-----|------|-----------|------|-----|-----|------|
|                                              |                      |                           |     |      |     |     |      | I ROK                          |      |     |     |      |           |      |     |     |      | II ROK    |      |     |     |      |           |      |     |     |      | III ROK   |      |     |     |      |           |      |     |     |      |
|                                              |                      |                           |     |      |     |     |      | semestr 1                      |      |     |     |      | semestr 2 |      |     |     |      | semestr 3 |      |     |     |      | semestr 4 |      |     |     |      | semestr 5 |      |     |     |      | semestr 6 |      |     |     |      |
|                                              |                      |                           |     |      |     |     |      | WYK                            | K/ĆW | LAB | SEM | ECTS | WYK       | K/ĆW | LAB | SEM | ECTS | WYK       | K/ĆW | LAB | SEM | ECTS | WYK       | K/ĆW | LAB | SEM | ECTS | WYK       | K/ĆW | LAB | SEM | ECTS | WYK       | K/ĆW | LAB | SEM | ECTS |
| przedmioty obowiązkowe                       |                      |                           |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Wstęp do algebry                             | ZAL (1)              | 60                        | 30  | 30   |     |     | 6    | 2                              | 2    |     |     | 6    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Matematyka 1                                 | EGZ (1)              | 120                       | 60  | 60   |     |     | 8    | 4                              | 4    |     |     | 8    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Matematyka 2                                 | EGZ (2)              | 120                       | 60  | 60   |     |     | 8    |                                |      |     |     |      | 4         | 4    |     |     | 8    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Matematyka 3                                 | EGZ (3)              | 90                        | 45  | 45   |     |     | 6    |                                |      |     |     |      |           |      |     |     |      | 3         | 3    |     |     | 6    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Pracownia komputerowa metod matematycznych 1 | ZAL (2)              | 30                        |     |      | 30  |     | 2    |                                |      |     |     |      |           |      | 2   |     | 2    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Pracownia komputerowa metod matematycznych 2 | ZAL (3)              | 30                        |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |           |      | 2   |     | 2    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Podstawy fizyki 1                            | EGZ (1)              | 135                       | 60  | 75   |     |     | 10   | 4                              | 5    |     |     | 10   |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Podstawy fizyki 2                            | EGZ (2)              | 120                       | 60  | 60   |     |     | 8    |                                |      |     |     |      | 4         | 4    |     |     | 8    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Podstawy fizyki 3                            | EGZ (3)              | 120                       | 60  | 60   |     |     | 8    |                                |      |     |     |      |           |      |     |     |      | 4         | 4    |     |     | 8    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Podstawy fizyki 4                            | EGZ (4)              | 75                        | 45  | 30   |     |     | 6    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      | 3         | 2    |     |     | 6    |           |      |     |     |      |           |      |     |     |      |
| Fizyka kwantowa                              | EGZ (4)              | 60                        | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      | 2         | 2    |     |     | 5    |           |      |     |     |      |           |      |     |     |      |
| Statystyka matematyczna                      | EGZ (3)              | 90                        | 45  | 45   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      | 3         | 3    |     |     | 5    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Metody numeryczne                            | EGZ (5)              | 75                        | 30  | 45   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      | 2         | 3    |     |     | 5    |           |      |     |     |      |
| Metody matematyczne w astronomii             | ZAL (6)              | 45                        |     |      | 45  |     | 3    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      | 3         |      | 3   |     |      |
| Podstawy astronomii 1                        | EGZ (1)              | 60                        | 30  | 30   |     |     | 5    | 2                              | 2    |     |     | 5    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Podstawy astronomii 2                        | EGZ (2)              | 60                        | 30  | 30   |     |     | 4    |                                |      |     |     |      | 2         | 2    |     |     | 4    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Pracownia astronomiczna                      | ZAL (2)              | 30                        |     |      | 30  |     | 3    |                                |      |     |     |      |           |      | 2   |     | 3    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Ćwiczenia obserwacyjne 1                     | ZAL (2)              | 15                        |     | 15   |     |     | 2    |                                |      |     |     |      |           | 1    |     |     | 2    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Ćwiczenia obserwacyjne 2                     | ZAL (3)              | 15                        |     | 15   |     |     | 2    |                                |      |     |     |      |           |      |     |     |      |           | 1    |     |     | 2    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Astrofizyka obserwacyjna 1                   | EGZ (3)              | 60                        | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      | 2         | 2    |     |     | 4    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Astrofizyka obserwacyjna 2                   | EGZ (4)              | 60                        | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      | 2         | 2    |     |     | 4    |           |      |     |     |      |           |      |     |     |      |
| Budowa i ewolucja gwiazd                     | EGZ (4)              | 60                        | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      | 2         | 2    |     |     | 5    |           |      |     |     |      |           |      |     |     |      |
| Astrofizyka układów planetarnych             | EGZ (5)              | 45                        | 30  | 15   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      | 2         | 1    |     |     | 4    |           |      |     |     |      |
| Wstęp do fizyki Słońca                       | EGZ (4)              | 75                        | 30  | 45   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      | 2         | 3    |     |     | 5    |           |      |     |     |      |           |      |     |     |      |
| Teoria atmosfer gwiazdowych                  | EGZ (6)              | 60                        | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     | 2    | 2         |      |     | 5   |      |
| Wstęp do systemów operacyjnych               | ZAL (2)              | 30                        |     |      | 30  |     | 2    |                                |      |     |     |      |           |      | 2   |     | 2    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Algorytmy i programowanie                    | ZAL (3)              | 60                        | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      | 2         | 2    |     |     | 4    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Laboratorium programowania                   | ZAL (5)              | 60                        |     |      | 60  |     | 4    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      | 4   |     | 4    |           |      |     |     |      |           |      |     |     |      |
| Seminarium licencjackie 1                    | ZAL (5)              | 15                        |     |      |     | 15  | 2    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      | 1   | 2   |      |           |      |     |     |      |
| Seminarium licencjackie 2                    | ZAL (6)              | 15                        |     |      |     | 15  | 2    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           | 1    |     | 2   |      |
| Wakacyjna praktyka obserwacyjna              | ZAL (4)              | 120                       |     |      |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     | 4   |      |           |      |     |     |      |           |      |     |     |      |
| Szkolenie wstępne z BHP i ochrony p-poż.     | ZAL (1)              | E-LEARNING                |     |      |     |     | 1    |                                |      |     |     | 1    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Wychowanie fizyczne                          | ZAL (5)              | 60                        |     | 60   |     |     | 0    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           | 2    |     |     |      | 2         |      |     |     |      |           |      |     |     |      |
| Lektorat                                     | EGZ (5)              | 180                       |     | 180  |     |     | 12   |                                |      |     |     |      |           |      |     |     |      |           | 4    |     |     |      |           | 4    |     |     |      | 4         |      |     | 12  |      |           |      |     |     |      |
| Ochrona własności intelektualnej             | ZAL (2)              | 15                        | 15  |      |     |     | 1    |                                |      |     |     |      | 1         |      |     |     | 1    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Podstawy przedsiębiorczości                  | ZAL (6)              | 60                        | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     | 2    | 2         |      |     | 4   |      |
| Praca dyplomowa i egzamin licencjacki        | EGZ (6)              |                           |     |      |     |     | 10   |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     | 10  |      |
| przedmioty uzupełniające do wyboru           |                      |                           |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Elementy mechaniki teoretycznej i STW        | EGZ (3)              | 60                        | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      | 2         | 2    |     |     | 5    |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| Prezentacja wyników naukowych                | ZAL (5)              | 30                        |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      | 2   |     | 2    |           |      |     |     |      |
| Bazy danych astronomicznych                  | ZAL (5)              | 30                        |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      | 2   |     | 2    |           |      |     |     |      |
| Wprowadzenie do programowania w IDL          | ZAL (6)              | 30                        |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           | 2    |     | 2   |      |
| Wprowadzenie do programowania w Pythonie     | ZAL (6)              | 30                        |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           | 2    |     | 2   |      |
| Tworzenie stron internetowych                | ZAL (6)              | 30                        |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           | 2    |     | 2   |      |
| Historia astronomii                          | EGZ (6)              | 60                        | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     | 2    | 2         |      |     | 5   |      |
| Seminarium z astronomii                      | ZAL (6)              | 30                        |     |      |     | 30  | 2    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           | 2    |     | 2   |      |
| Praktyka heliofizyczna                       | ZAL (6)              | 24                        |     |      |     |     | 1    |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     | 1   |      |
| łącznie                                      |                      |                           |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |           |      |     |     |      |
| przedmioty obowiązkowe                       |                      |                           |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      | 14        | 19   | 2   |     | 31   | 11        | 17   | 4   |     | 33   | 4         | 10   |     | 1   | 23   | 4         | 4    | 3   | 1   | 24   |
| przedmioty uzupełniające do wyboru           |                      |                           |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      | 2         | 2    |     |     | 5    |           |      |     |     |      |           | 4    |     | 4   | 2    | 2         | 6    | 2   | 14  |      |

UWAGA:

Na I roku student wybiera do realizacji przedmioty matematyczno-fizyczne z toku A lub B. Warunkiem dopuszczenia do egzaminu licencjackiego jest zaliczenie wszystkich przedmiotów obowiązkowych dla wybranego toku, uzyskanie co najmniej 170 ECTS i pozytywna ocena złożonej pracy dyplomowej.

Oznaczenia:

- WYK – wykład
- K/ĆW – konwersatorium/ćwiczenia
- LAB – laboratorium/pracownia
- SEM – seminarium