

**PLAN STUDIÓW: ASTRONOMIA, STUDIA I STOPNIA, TOK B dla studentów zaczynających naukę w roku 2017**

| NAZWA PRZEDMIOTU                            | EGZ/ZAL (semestr) | łączy wymiar godz. | WYK | K/ĆW | LAB | SEM | ECTS | LICZBA GODZIN ZAJĘĆ W TYGODNIU |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
|---|-------------------|--------------------|-----|------|-----|-----|------|--------------------------------|------|-----|-----|------|-----------|------|-----|-----|------|--------------------|------|-----|-----|------|-----------|------|-----|-----|------|---------------------|------|-----|-----|------|-----------|------|-----|-----|------|
|   |                   |                    |     |      |     |     |      | I ROK (2017/2018)              |      |     |     |      |           |      |     |     |      | II ROK (2018/2019) |      |     |     |      |           |      |     |     |      | III ROK (2019/2020) |      |     |     |      |           |      |     |     |      |
|   |                   |                    |     |      |     |     |      | 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                      |                   |                    |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 1 Wstęp do algebry                          | ZAL (1)           | 60                 | 30  | 30   |     |     | 6    | 2                              | 2    |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 2 Matematyka 1                              | EGZ (1)           | 120                | 60  | 60   |     |     | 8    | 4                              | 4    |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 3 Matematyka 2                              | EGZ (2)           | 120                | 60  | 60   |     |     | 8    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 4 Matematyka 3                              | EGZ (3)           | 90                 | 45  | 45   |     |     | 6    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 5 Pracownia komputerowa metod matemat. 1    | ZAL (2)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 6 Pracownia komputerowa metod matemat. 2    | ZAL (3)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 7 Podstawy fizyki 1                         | EGZ (1)           | 135                | 60  | 75   |     |     | 10   | 4                              | 5    |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 8 Podstawy fizyki 2                         | EGZ (2)           | 120                | 60  | 60   |     |     | 8    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 9 Podstawy fizyki 3                         | EGZ (3)           | 120                | 60  | 60   |     |     | 8    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 10 Podstawy fizyki 4                        | EGZ (4)           | 75                 | 45  | 30   |     |     | 6    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 11 Fizyka kwantowa                          | EGZ (4)           | 60                 | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 12 Statystyka matematyczna                  | EGZ (3)           | 90                 | 45  | 45   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 13 Metody numeryczne                        | EGZ (5)           | 75                 | 30  | 45   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 14 Metody matematyczne w astronomii         | ZAL (6)           | 45                 |     |      | 45  |     | 3    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 15 Podstawy astronomii 1                    | EGZ (1)           | 60                 | 30  | 30   |     |     | 5    | 2                              | 2    |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 16 Podstawy astronomii 2                    | EGZ (2)           | 60                 | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 17 Pracownia astronomiczna                  | ZAL (2)           | 30                 |     |      | 30  |     | 3    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 18 Ćwiczenia obserwacyjne 1                 | ZAL (2)           | 15                 |     | 15   |     |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 19 Ćwiczenia obserwacyjne 2                 | ZAL (3)           | 15                 |     | 15   |     |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 20 Astrofizyka obserwacyjna 1               | EGZ (3)           | 60                 | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 21 Astrofizyka obserwacyjna 2               | EGZ (4)           | 60                 | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 22 Budowa i ewolucja gwiazd                 | EGZ (4)           | 60                 | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 23 Astrofizyka układów planetarnych         | EGZ (5)           | 45                 | 30  | 15   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 24 Wstęp do fizyki Słońca                   | EGZ (4)           | 60                 | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 25 Teoria atmosfer gwiazdowych              | EGZ (6)           | 60                 | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 26 Wstęp do systemów operacyjnych           | ZAL (2)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 27 Algorytmy i programowanie                | ZAL (3)           | 60                 | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 28 Laboratorium programowania               | ZAL (5)           | 60                 |     |      | 60  |     | 4    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 29 Seminarium licencjackie 1                | ZAL (5)           | 15                 |     |      | 15  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 30 Seminarium licencjackie 2                | ZAL (6)           | 15                 |     |      | 15  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 31 Wakacyjna praktyka obserwacyjna          | ZAL (4)           | 120                |     |      |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 32 Szkolenie wstępne z BHP i ochrony p-poż. | ZAL (1)           |                    |     |      |     |     | 1    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 33 Wychowanie fizyczne                      | ZAL (5)           | 60                 |     | 60   |     |     | 0    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 34 Lektorat                                 | EGZ (5)           | 180                |     | 180  |     |     | 12   |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 35 Ochrona własności intelektualnej         | ZAL (2)           | 15                 | 15  |      |     |     | 1    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 36 Podstawy przedsiębiorczości              | ZAL (6)           | 60                 | 30  | 30   |     |     | 4    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 37 Praca dyplomowa i egzamin licencjacki    | EGZ (6)           |                    |     |      |     |     | 10   |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| przedmioty uzupełniające do wyboru          |                   |                    |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 1 Elementy mechaniki teoretycznej i STW     | EGZ (3)           | 60                 | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 2 Prezentacja wyników naukowych             | ZAL (5)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 3 Bazy danych astronomicznych               | ZAL (5)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 4 Wprowadzenie do programowania w IDL       | ZAL (6)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 5 Wprowadzenie do programowania w Pythonie  | ZAL (6)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 6 Tworzenie stron internetowych             | ZAL (6)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 7 Historia astronomii                       | EGZ (6)           | 60                 | 30  | 30   |     |     | 5    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 8 Seminarium z astronomii                   | ZAL (6)           | 30                 |     |      | 30  |     | 2    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| 9 Praktyka heliofizyczna                    | ZAL (6)           | 24                 |     |      |     |     | 1    |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| łącznie                                     |                   |                    |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| przedmioty obowiązkowe                      |                   |                    |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |
| przedmioty uzupełniające do wyboru          |                   |                    |     |      |     |     |      |                                |      |     |     |      |           |      |     |     |      |                    |      |     |     |      |           |      |     |     |      |                     |      |     |     |      |           |      |     |     |      |

**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