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Wojskowa  
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Techniczna

PLAN NIESTACJONARNYCH STUDIÓW PIERWSZEGO STOPNIA (INŻYNIERSKIE) O PROFILU OGÓLNOAKADEMICKIM

DYSCYPLINA NAUKOWA (WIODĄCA): **AUTOMATYKA, ELEKTRONIKA I ELEKTROTECHNIKA**

KIERUNEK STUDIÓW: **ENERGETYKA**

Specjalność profilowana przedmiotami wybieralnymi: **maszyny i urządzenia w energetyce**

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| GRUPY ZAJĘĆ / PRZEDMIOTY                                                                  | Dyscyplina naukowa | ogółem godzin/ pkt ECTS |      | ECTS naukowe | ECTS udział NA | w tym godzin: |        |      |         |        | liczba godzin/rygor/pkt ECTS w semestrze: |       |       |       |       |      |       |      |       |      |       |      |       |      | jednostka organizacyjna administrująca odpowiedzialna za przedmiot | Uwagi |                  |      |
|-------------------------------------------------------------------------------------------|--------------------|-------------------------|------|--------------|----------------|---------------|--------|------|---------|--------|-------------------------------------------|-------|-------|-------|-------|------|-------|------|-------|------|-------|------|-------|------|--------------------------------------------------------------------|-------|------------------|------|
|                                                                                           |                    | I. godz                 | ECTS |              |                | wykl.         | ćwicz. | lab. | projekt | semin. | I                                         |       | II    |       | III   |      | IV    |      | V     |      | VI    |      | VII   |      |                                                                    |       |                  |      |
|                                                                                           |                    |                         |      |              |                |               |        |      |         |        | godz.                                     | ECTS  | godz. | ECTS  | godz. | ECTS | godz. | ECTS | godz. | ECTS | godz. | ECTS | godz. | ECTS |                                                                    |       | godz.            | ECTS |
| A.Grupa treści kształcenia ogólnego                                                       |                    | 224                     | 21.0 | 8.5          | 10.0           | 66            | ###    | 16.0 |         |        | 114                                       | 13.0  | 50    | 4.0   | 30    | 2.0  | 30    | 2.0  |       |      |       |      |       |      |                                                                    |       |                  |      |
| 1 etyka zawodowa                                                                          | NS                 | 12                      | 1.5  | 1.0          | 0.5            | 10            | 2      |      |         |        | 12                                        | + 1.5 |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WCY              |      |
| 2 wprowadzenie do studiowania                                                             | NS                 | 4                       | 0.5  | 0.5          | 0.5            | 4             |        |      |         |        | 4                                         | + 0.5 |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | PdsJ             |      |
| 3 podstawy zarządzania i przedsiębiorczości                                               | NZJ                | 20                      | 3.0  | 1.5          | 1.0            | 12            | 8      |      |         |        | 20                                        | + 3   |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WLO              |      |
| 4 wybrane zagadnienia prawa                                                               | NP                 | 10                      | 1.5  | 1.5          | 0.5            | 8             | 2      |      |         |        | 10                                        | + 1.5 |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WLO              |      |
| 5 wprowadzenie do informatyki                                                             | ITT                | 24                      | 3.0  | 2.0          | 1.0            | 8             |        | 16   |         |        | 24                                        | + 3   |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WCY/WE/IRE       |      |
| 6 ochrona własności intelektualnych                                                       | NP                 | 10                      | 1.5  | 1.0          | 0.5            | 8             | 2      |      |         |        | 10                                        | + 1.5 |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WLO              |      |
| 7 BHP                                                                                     |                    | 4                       |      |              |                | 4             |        |      |         |        | 4                                         |       |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | BHP              |      |
| 8 język obcy                                                                              | J                  | 120                     | 8.0  |              | 5.0            |               | 120    |      |         |        | 30                                        | + 2   | 30    | + 2   | 30    | + 2  | 30    | x 2  |       |      |       |      |       |      |                                                                    |       | SJO              |      |
| 9 historia Polski                                                                         | H                  | 20                      | 2.0  | 1.0          | 1.0            | 12            | 8      |      |         |        |                                           |       | 20    | + 2   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WLO              |      |
| B. Grupa treści kształcenia podstawowego                                                  |                    | 406                     | 54.0 | 38.0         | 18.0           | 184           | 158    | 64   |         |        | 120                                       | 17.0  | 198   | 26.0  | 70    | 8.0  | 18    | 3.0  |       |      |       |      |       |      |                                                                    |       |                  |      |
| 1 wprowadzenie do metrologii                                                              | AEE                | 16                      | 2.0  | 2.0          | 1.0            | 8             | 8      |      |         |        | 16                                        | + 2   |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 2 matematyka 1                                                                            | M                  | 42                      | 6.0  | 6.0          | 2.0            | 18            | 24     |      |         |        | 42                                        | x 6   |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WCY              |      |
| 3 matematyka 2                                                                            | M                  | 42                      | 6.0  | 6.0          | 2.0            | 20            | 22     |      |         |        | 42                                        | x 6   |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WCY              |      |
| 4 podstawy grafiki inżynierskiej                                                          | IM                 | 20                      | 3.0  | 2.0          | 1.0            | 8             | 12     |      |         |        | 20                                        | + 3   |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WIM              |      |
| 5 matematyka 3                                                                            | M                  | 28                      | 4.0  | 4.0          | 1.0            | 12            | 12     | 4    |         |        |                                           |       | 28    | x 4   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WCY              |      |
| 6 fizyka 1                                                                                | NF                 | 56                      | 6.0  | 2.0          | 2.0            | 26            | 20     | 10   |         |        |                                           |       | 56    | x 6   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WTC              |      |
| 7 chemia                                                                                  | IC                 | 36                      | 5.0  | 2.0          | 1.5            | 16            | 8      | 12   |         |        |                                           |       | 36    | + 5   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WTC              |      |
| 8 elektrotechnika                                                                         | AEE                | 44                      | 6.0  | 4.0          | 2.0            | 16            | 16     | 12   |         |        |                                           |       | 44    | x 6   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 9 materiały konstrukcyjne                                                                 | IM                 | 34                      | 5.0  | 4.0          | 1.5            | 18            |        | 16   |         |        |                                           |       | 34    | x 5   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WTC              |      |
| 10 fizyka 2                                                                               | NF                 | 42                      | 4.0  | 1.0          | 2.0            | 18            | 14     | 10   |         |        |                                           |       |       |       | 42    | x 4  |       |      |       |      |       |      |       |      |                                                                    |       | WTC              |      |
| 11 mechanika techniczna 1                                                                 | IM                 | 28                      | 4.0  | 3.0          | 1.0            | 14            | 14     |      |         |        |                                           |       | 28    | + 4   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WIM / IMIO       |      |
| 12 mechanika techniczna 2                                                                 | IM                 | 18                      | 3.0  | 2.0          | 1.0            | 10            | 8      |      |         |        |                                           |       |       |       | 18    | + 3  |       |      |       |      |       |      |       |      |                                                                    |       | WIM / IMIO       |      |
| C. Grupa treści kształcenia kierunkowego                                                  |                    | 418                     | 56.0 | 48.0         | 19.0           | 234           | 40     | 102  | 28      | 14     |                                           |       |       |       | 146   | 20.0 | 144   | 19.0 | 50    | 7.0  | 60    | 8.0  | 18    | 2.0  |                                                                    |       |                  |      |
| 1 automatyka                                                                              | AEE                | 36                      | 5.0  | 4.5          | 1.5            | 18            | 6      | 12   |         |        |                                           |       | 36    | x 5   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 2 elektronika                                                                             | AEE                | 36                      | 4.5  | 4.5          | 1.5            | 20            |        | 16   |         |        |                                           |       | 36    | x 4.5 |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 3 materiały eksploatacyjne                                                                | IM                 | 18                      | 3.0  | 2.5          | 1.0            | 8             |        | 10   |         |        |                                           |       | 18    | + 3   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 4 mechanika płynów 1                                                                      | IM                 | 28                      | 3.5  | 2.5          | 1.0            | 16            | 12     |      |         |        |                                           |       | 28    | + 3.5 |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WML              |      |
| 5 termodynamika techniczna 1                                                              | IM                 | 28                      | 4.0  | 3.5          | 1.0            | 16            | 4      | 8    |         |        |                                           |       | 28    | x 4   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WML              |      |
| 6 mechanika płynów 2                                                                      | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 10            |        | 8    |         |        |                                           |       |       |       | 18    | + 2  |       |      |       |      |       |      |       |      |                                                                    |       | WML              |      |
| 7 termodynamika techniczna 2                                                              | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 10            |        | 8    |         |        |                                           |       |       |       | 18    | + 2  |       |      |       |      |       |      |       |      |                                                                    |       | WML              |      |
| 8 maszyny elektryczne                                                                     | AEE                | 44                      | 6.0  | 5.5          | 2.0            | 20            | 8      | 16   |         |        |                                           |       | 44    | x 6   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 9 podstawy konstrukcji maszyn i urządzeń                                                  | IM                 | 28                      | 4.0  | 3.5          | 1.0            | 12            |        | 16   |         |        |                                           |       | 28    | x 4   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WIM / IRIKM      |      |
| 10 technologie maszyn energetycznych                                                      | IM                 | 36                      | 5.0  | 3.5          | 1.5            | 18            | 10     | 8    |         |        |                                           |       | 36    | x 5   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 11 renewable energy sources (w jęz. angielskim)                                           | IM                 | 18                      | 3.0  | 2.5          | 1.0            | 10            |        | 8    |         |        |                                           |       |       |       |       |      | 18    | + 3  |       |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 12 przesyłanie energii elektrycznej                                                       | AEE                | 32                      | 4.0  | 3.5          | 1.5            | 20            |        | 12   |         |        |                                           |       |       |       | 32    | x 4  |       |      |       |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 13 eksploatacja urządzeń elektroenergetycznych                                            | AEE                | 18                      | 2.0  | 2.0          | 1.0            | 12            |        | 6    |         |        |                                           |       |       |       |       |      |       | 18   | + 2   |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 14 gospodarka energetyczna                                                                | AEE                | 24                      | 4.0  | 3.5          | 1.0            | 16            |        | 8    |         |        |                                           |       |       |       |       |      |       | 24   | x 4   |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 15 ochrona środowiska w energetyce                                                        | AEE                | 18                      | 2.0  | 2.0          | 1.0            | 10            |        | 8    |         |        |                                           |       |       |       |       |      |       | 18   | + 2   |      |       |      |       |      |                                                                    |       | IOE / WEL        |      |
| 16 prowadzenie działalności przedsiębiorstwa energetycznego na rynku                      | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 18            |        |      |         |        |                                           |       |       |       |       |      |       |      |       |      |       | 18   | + 2   |      |                                                                    |       | WEL / WIM / IPIT |      |
| D. Grupa treści wybieralnych                                                              |                    | 400                     | 43.0 | 29.0         | 16.5           | 206           | 64     | 116  | 10      | 4      |                                           |       |       |       | 48    | 6.0  | 196   | 20.0 | 102   | 11.0 |       |      |       |      |                                                                    |       |                  |      |
| 1 bezpieczeństwo użytkowania urządzeń elektrycznych                                       | AEE                | 12                      | 1.0  | 0.5          | 0.5            | 10            |        |      |         | 2      |                                           |       |       |       | 12    | + 1  |       |      |       |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 2 podstawy techniki wysokich napięć                                                       | AEE                | 18                      | 3.0  | 1.5          | 1.0            | 10            |        | 6    |         | 2      |                                           |       |       | 18    | + 3   |      |       |      |       |      |       |      |       |      |                                                                    |       | WEL / ISE        |      |
| 3 podstawy wymiany ciepła                                                                 | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 12            |        | 6    |         |        |                                           |       | 18    | + 2   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WML              |      |
| 4 budowa i eksploatacja silników spalinyowych                                             | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 12            | 6      | 10   |         |        |                                           |       |       |       |       |      | 28    | + 3  |       |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 5 diagnostyka maszyn i urządzeń w energetyce                                              | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 10            | 6      | 12   |         |        |                                           |       |       |       |       |      | 28    | x 3  |       |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 6 komputerowe wspomaganie obliczeń inżynierskich maszyn i urządzeń w energetyce           | IM                 | 28                      | 2.0  | 1.5          | 1.0            | 12            |        | 16   |         |        |                                           |       |       |       |       |      | 28    | + 2  |       |      |       |      |       |      |                                                                    |       | WIM / IMIO       |      |
| 7 maszyny i urządzenia dźwigowe i transportu bliskiego                                    | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 12            | 6      |      | 10      |        |                                           |       |       |       |       |      | 28    | + 3  |       |      |       |      |       |      |                                                                    |       | WIM / IRIKM      |      |
| 8 mobilne urządzenia energetyczne                                                         | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 18            | 4      | 6    |         |        |                                           |       | 28    | + 3   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WIM / IRIKM      |      |
| 9 napędy hydrauliczne                                                                     | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 18            | 4      | 6    |         |        |                                           |       | 28    | + 3   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WIM / IRIKM      |      |
| 10 ogniwa paliwowe w systemach energetycznych                                             | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 14            | 8      | 6    |         |        |                                           |       | 28    | x 3   |       |      |       |      |       |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 11 podstawy dynamiki maszyn w energetyce                                                  | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 10            |        | 8    |         |        |                                           |       |       |       |       |      |       | 18   | + 2   |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 12 podstawy projektowania, budowy i eksploatacji infrastruktury rurociągowej w energetyce | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 12            |        | 16   |         |        |                                           |       |       |       |       |      |       | 28   | + 3   |      |       |      |       |      |                                                                    |       | WIM / IMIO       |      |
| 13 transport drogowy i jego organizacja w energetyce                                      | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 10            | 8      | 10   |         |        |                                           |       |       |       |       |      |       | 28   | + 3   |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 14 tribologia i tribotechnika                                                             | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 10            |        | 8    |         |        |                                           |       |       |       |       |      |       |      |       |      | 18    | + 2  |       |      |                                                                    |       | WIM / IPIT       |      |
| 15 logistyka w energetyce                                                                 | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 12            | 6      |      |         |        |                                           |       |       |       |       |      |       |      |       |      | 18    | + 2  |       |      |                                                                    |       | WLO              |      |
| 16 biopaliwa                                                                              | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 8             |        | 10   |         |        |                                           |       |       |       |       |      |       |      |       |      | 18    | + 2  |       |      |                                                                    |       | WIM / IPIT       |      |
| 17 turbiny wodne, parowe, gazowe i silownie skojarzone                                    | IM                 | 28                      | 3.0  | 2.0          | 1.0            | 16            | 8      | 4    |         |        |                                           |       |       |       |       |      |       | 28   | x 3   |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| pozostałe specjalistyczne wybieralne dwa przedmioty wybieralne z grupy trzech             |                    | 36                      | 4.0  | 3.0          | 2.0            |               |        | 36   |         |        |                                           |       |       |       |       |      |       | 36   |       | 4    |       |      |       |      |                                                                    |       |                  |      |
| 1 eksploatacja urządzeń energetycznych                                                    | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 8             | 10     |      |         |        |                                           |       |       |       |       |      |       | 18   | + 2   |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 2 mechatronika w energetyce                                                               | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 10            | 4      | 4    |         |        |                                           |       |       |       |       |      |       | 18   | + 2   |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| 3 rozwój układów napędowych maszyn energetycznych                                         | IM                 | 18                      | 2.0  | 1.5          | 1.0            | 12            | 6      |      |         |        |                                           |       |       |       |       |      |       | 18   | + 2   |      |       |      |       |      |                                                                    |       | WIM / IPIT       |      |
| jeden mprzedmiot wybieralny z grupy dwóch                                                 |                    | 28                      | 2.0  | 1.5          | 1.0            |               |        | 28   |         |        |                                           |       |       |       |       |      |       | 28   |       | 2    |       |      |       |      |                                                                    |       |                  |      |
| 1 matlab dla energetyków                                                                  | ITT                | 28                      | 2.0  | 1.5          | 1.0            | 4             |        | 24   |         |        |                                           |       |       |       |       |      |       | 28   | + 2   |      |       |      |       |      |                                                                    |       | WIM / IMIO       |      |
| 2 programowanie sterowników PLC                                                           | ITT                | 28                      | 2.0  | 1.5          | 1.             |               |        |      |         |        |                                           |       |       |       |       |      |       |      |       |      |       |      |       |      |                                                                    |       |                  |      |