

| Faculty of Fundamental Problems of Technology                                                                                                                                                                    |   |                                |           |            |         |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------|-----------|------------|---------|---------|
| COURSE CARD                                                                                                                                                                                                      |   |                                |           |            |         |         |
| Name in polish                                                                                                                                                                                                   | : | <b>Systemy Identyfikacyjne</b> |           |            |         |         |
| Name in english                                                                                                                                                                                                  | : | <b>Identification Systems</b>  |           |            |         |         |
| Field of study                                                                                                                                                                                                   | : | Computer Science               |           |            |         |         |
| Specialty (if applicable)                                                                                                                                                                                        | : |                                |           |            |         |         |
| Undergraduate degree and form of                                                                                                                                                                                 | : | masters, stationary            |           |            |         |         |
| Type of course                                                                                                                                                                                                   | : | optional                       |           |            |         |         |
| Course code                                                                                                                                                                                                      | : | E2_W25                         |           |            |         |         |
| Group rate                                                                                                                                                                                                       | : | Yes                            |           |            |         |         |
|                                                                                                                                                                                                                  |   | Lectures                       | Exercides | Laboratory | Project | Seminar |
| Number of classes held in schools (ZZU)                                                                                                                                                                          |   | 30                             | 30        |            |         |         |
| The total number of hours of student work-load (CNPS)                                                                                                                                                            |   | 60                             | 120       |            |         |         |
| Assesment                                                                                                                                                                                                        |   | pass                           |           |            |         |         |
| For a group of courses final course mark                                                                                                                                                                         |   | X                              |           |            |         |         |
| Number of ECTS credits                                                                                                                                                                                           |   | 3                              | 3         |            |         |         |
| including the number of points corresponding to the classes of practical (P)                                                                                                                                     |   |                                | 3         |            |         |         |
| including the number of points corresponding occupations requiring direct contact (BK)                                                                                                                           |   | 3                              | 3         |            |         |         |
| PREREQUISITES FOR KNOWLEDGE, SKILLS AND OTHER POWERS                                                                                                                                                             |   |                                |           |            |         |         |
| COURSE OBJECTIVES                                                                                                                                                                                                |   |                                |           |            |         |         |
| <p><b>C1</b> presentation of identification techniques with personal identity documents, biometric methods</p> <p><b>C2</b> getting skills in designing solutions based on identity documents and biometrics</p> |   |                                |           |            |         |         |

**COURSE LEARNING OUTCOMES**

The scope of the student's knowledge:

**W1**

**W2**

**W3**

**W4**

**W5**

The student skills:

**U1**

**U2**

**U3**

**U4**

The student's social competence:

**K1**

**K2**

**K3**

**COURSE CONTENT**

Type of classes - lectures

|     |                                                     |    |
|-----|-----------------------------------------------------|----|
| Wy1 | electronic identification documents                 | 8h |
| Wy2 | graphical protection of identification documents    | 2h |
| Wy3 | overview of biometric systems                       | 4h |
| Wy4 | reliability issues for biometric systems            | 6h |
| Wy5 | protection of biometric data                        | 6h |
| Wy6 | physical monitoring based on identification systems | 4h |

Type of classes - exercises

|     |                                                                        |    |
|-----|------------------------------------------------------------------------|----|
| Ćw1 | protocol analysis of protocols for electronic identification documents | 4h |
| Ćw2 | design of applications based on electronic identity documents          | 6h |
| Ćw3 | analysis of biometrics                                                 | 4h |
| Ćw4 | design of solutions based on biometric methods                         | 6h |
| Ćw5 | management of sensitive information                                    | 6h |

|                                                                                                                                                                                                                                               |                           |                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------|
| Applied learning tools                                                                                                                                                                                                                        |                           |                                         |
| <ol style="list-style-type: none"> <li>1. Traditional lecture</li> <li>2. Multimedia lecture</li> <li>3. Solving tasks and problems</li> <li>4. Solving programming tasks</li> <li>5. Consultation</li> <li>6. Self-study students</li> </ol> |                           |                                         |
| EVALUATION OF THE EFFECTS OF EDUCATION ACHIEVEMENTS                                                                                                                                                                                           |                           |                                         |
| Value                                                                                                                                                                                                                                         | Number of training effect | Way to evaluate the effect of education |
| F1                                                                                                                                                                                                                                            | W1-W5, K1-K3              |                                         |
| F2                                                                                                                                                                                                                                            | U1-U4, K1-K3              |                                         |
| $P = \% * F1 + \% * F2$                                                                                                                                                                                                                       |                           |                                         |
| BASIC AND ADDITIONAL READING                                                                                                                                                                                                                  |                           |                                         |
| <ol style="list-style-type: none"> <li>1.</li> <li>2.</li> </ol>                                                                                                                                                                              |                           |                                         |
| SUPERVISOR OF COURSE                                                                                                                                                                                                                          |                           |                                         |
| dr Przemysław Kubiak                                                                                                                                                                                                                          |                           |                                         |

**RELATIONSHIP MATRIX EFFECTS OF EDUCATION FOR THE COURSE**  
**Identification Systems**

**WITH EFFECTS OF EDUCATION ON THE DIRECTION OF COMPUTER SCIENCE**

| Course training effect | Reference to the effect of the learning outcomes defined for the field of study and specialization (if applicable) | Objectives of the course** | The contents of the course** | Number of teaching tools** |
|------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------|----------------------------|
| W1                     | K2_W01 K2_W02 K2_W04 K2_W05<br>K2_W06 K2_W07 K2_W08 K2_W09                                                         | C1                         | Wy1-Wy6                      | 1 2 5 6                    |
| W2                     | K2_W01 K2_W02 K2_W04 K2_W05<br>K2_W06 K2_W07 K2_W08 K2_W09                                                         | C1                         | Wy1-Wy6                      | 1 2 5 6                    |
| W3                     | K2_W01 K2_W02 K2_W04 K2_W05<br>K2_W06 K2_W08 K2_W09                                                                | C1                         | Wy1-Wy6                      | 1 2 5 6                    |
| W4                     | K2_W01 K2_W02 K2_W04 K2_W05<br>K2_W07 K2_W08 K2_W09 K2_W11                                                         | C1                         | Wy1-Wy6                      | 1 2 5 6                    |
| W5                     | K2_W01 K2_W02 K2_W04 K2_W05<br>K2_W06 K2_W07 K2_W08 K2_W09                                                         | C1                         | Wy1-Wy6                      | 1 2 5 6                    |
| U1                     | K2_U01 K2_U02 K2_U03 K2_U08<br>K2_U09 K2_U10 K2_U12 K2_U15<br>K2_U16 K2_U17 K2_U18 K2_U19<br>K2_U20 K2_U21         | C2                         | Ćw1-Ćw5                      | 3 4 5 6                    |
| U2                     | K2_U01 K2_U02 K2_U03 K2_U08<br>K2_U09 K2_U10 K2_U12 K2_U15<br>K2_U16 K2_U17 K2_U18 K2_U19<br>K2_U20 K2_U21         | C2                         | Ćw1-Ćw5                      | 3 4 5 6                    |
| U3                     | K2_U01 K2_U03 K2_U08 K2_U09<br>K2_U10 K2_U12 K2_U13 K2_U14<br>K2_U15 K2_U16 K2_U18 K2_U19<br>K2_U21                | C2                         | Ćw1-Ćw5                      | 3 4 5 6                    |
| U4                     | K2_U01 K2_U02 K2_U09 K2_U12<br>K2_U15 K2_U16 K2_U17 K2_U18<br>K2_U19 K2_U20 K2_U21 K2_U22                          | C2                         | Ćw1-Ćw5                      | 3 4 5 6                    |
| K1                     | K2_K01 K2_K03 K2_K04 K2_K05<br>K2_K10 K2_K14 K2_K15 K2_K16                                                         | C1 C2                      | Wy1-Wy6<br>Ćw1-Ćw5           | 1 2 3 4 5 6                |
| K2                     | K2_K03 K2_K04 K2_K07 K2_K09<br>K2_K10 K2_K14 K2_K15 K2_K16                                                         | C1 C2                      | Wy1-Wy6<br>Ćw1-Ćw5           | 1 2 3 4 5 6                |
| K3                     | K2_K01 K2_K02 K2_K03 K2_K04<br>K2_K05 K2_K10 K2_K14 K2_K15<br>K2_K16                                               | C1 C2                      | Wy1-Wy6<br>Ćw1-Ćw5           | 1 2 3 4 5 6                |