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| Universitas Alma Ata<br>The Globe Inspiring University | **ALMA ATA UNIVERSITY**<br>**FACULTY OF COMPUTER AND ENGINEERING**<br>**BACHELOR OF INFORMATICS ENGINEERING STUDY PROGRAM** | |

## SEMESTER LEARNING PLAN

| **COURSE (MK)** | **CODE** | **Study Material (BK)** | **WEIGHT (credits)** | | **SEMESTER** | **Date of Preparation** |
|---|---|---|---|---|---|---|
| Ethics and Profession | FKOM012 | Social Issues and Professional Practice; Security Policy and Management; Security Issues and Principles; | T [Theory] = 3 | P[Practice] = 0 | (6) Six | 10 January 2024 |

| | **Semester Learning Plan Developer** | **Study Material Coordinator** | **Head of study programme** |
|---|---|---|---|
| **RESPONSE** | Dita Danianti, S.Kom., M.Kom | Dita Danianti, S.Kom., M.Kom | Dhina Puspasari Wijaya, S.Kom., M.Kom |

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| **Learning Outcomes** | **SLOs that are imposed on MKs** | |
| | CPL01 | Pious to God Almighty, law-abiding, and disciplined in social and state life. |
| | CPL12 | Implementing the values of Islamic teachings that are rahmatan lil'alamiin. |
| | **Course Learning Outcomes (CPMK)** | |
| | CPMK012 | Able to run APPLY social life of society based on applicable legal rules and norms. |
| | CPMK122 | Able to demonstrate entrepreneurial spirit, independence, and leadership based on values, norms, and ethics as well as professionalism and responsibility. |
| | **End ability of each learning stage (Sub-CPMK)** | |
| | | |

| Correlation of CPMK to Sub-CPMK | |
|---|---|

| Course Learning Outcomes | | Supported SLOs |
|---|---|---|
| **CPMK Code** | **Description of CPMK** | |
| CPMK012 | Able to run APPLY social life of society based on applicable legal rules and norms. | CPL01 |
| CPMK122 | Able to demonstrate entrepreneurial spirit, independence, and leadership based on values, norms, and ethics as well as professionalism and responsibility. | CPL12 |

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|---|---|---|
| **Brief description of the course** | This course is intended to improve ethical knowledge, ethical awareness and ethical behaviour of professionals in the field of informatics. This improvement is expected to have implications for increasing students' ability to make ethical decisions. An ethical decision involves not only rationality, but also emotions and intuition. To improve ethical knowledge, the material includes various spectrums of thought in ethics, descriptions of ethics in the world of work, ethical issues in the profession, as well as their implementation and development in the reality of professional practice in informatics. | |
| **Study Material:** Learning Materials | spectrum of thought in ethics, description of ethics in the world of work, ethical issues in the profession, as well as its implementation and development in the reality of professional practice in informatics. | |
| **Library** | **Main:** | |
| | 1. A. Simarmata, Professional Ethics: Building Professionalism, Yayasan Kita Tulis, 2020. | |
| | **Supporters:** | |
| | 2. H. Pasolong, Professional Ethics, Nas Media Pustaka, 2020.<br>3. M. R. Hambali, et al, Professional Ethics, Agrapana Media, 2021. | |
| **Lecturer** | Dita Danianti, S.Kom., M.Kom | |
| **Prerequisite Courses** | - | |

| Week 1 | End ability of each learning stage (Sub-CPMK) | Indicators | Criteria and Techniques | Form of Learning; Learning Methods; Student Assignments; [Time Estimation] | | Learning Materials [Library] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | Offline (5) | Online (6) | (7) | (8) |
| 1 | CPMK0121 - Ability to live the social life of the community | Students are able to explain correctly the meaning and concept of professional ethics | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 2 | CPMK0121 - Ability to live the social life of the community | Students are able to understand the concepts of profession | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 3 | CPMK0122 - Ability to understand legal rules and norms | Students are able to understand the concept of professional code of ethics | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 4 | CPMK0122 - Ability to understand legal rules and norms | Students are able to understand the rules and legal norms | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 5 | CPMK0123 - Ability to implement legal rules and norms | Students are able to demonstrate attitudes based on values, norms, and ethics as well as professionalism and responsibility. | Presentation Quality; Performance | Student centred learning | Asynchronous | 1,2,3 | 10 |
| 6 | CPMK0123 - Ability to implement legal rules and norms | Students are able to understand the importance of organisation in a profession and the need for a professional code of ethics. | Presentation Quality; Performance | Student centred learning | Asynchronous | 1,2,3 | 10 |
| 7 | CPMK0123 - Ability to implement legal rules and norms | Students understand the telecommunication law in regulating the use of information technology | Presentation Quality; Performance | Student centred learning | Asynchronous | 1,2,3 | 10 |
| 8 | CPMK1221 - Able to demonstrate entrepreneurial spirit, independence, and leadership | Students are able to understand the implications of the enactment of the ITE Law. | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 9 | CPMK1221 - Able to demonstrate entrepreneurial spirit, independence, and leadership | Students are able to understand the establishment procedure business in the field of technology. | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 10 | CPMK1221 - Able to demonstrate entrepreneurial spirit, independence, and leadership | Accuracy in Students are able to explain the tasks for various professions in the field of information technology. | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 13 | CPMK1222 - Able to demonstrate behaviour based on values, norms and ethics as well as professionalism and responsibility | Students are able to explain the differences in professional models or standards between USA vs Europe | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 14 | CPMK1222 - Able to demonstrate behaviour based on values, norms, and ethics as well as professionalism and responsibility | Students are able to explain the institutions who carry out certification in the field of information technology. | Quality of Presentation; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3 | 10 |

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|---|---|---|---|---|---|---|---|
| 11 | CPMK1221 - Able to demonstrate entrepreneurial spirit, independence, and leadership | Students are able to understand the modes of crime in the IT field | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 12 | CPMK1222 - Able to demonstrate behaviour based on values, norms, and ethics as well as professionalism and responsibility | Students are able to explain case examples cybercrime in Indonesia | Presentation Quality; Performance | Student centred learning | Asynchronous | 1,2,3 | 10 |
| 15 | CPMK1222 - Able to demonstrate behaviour based on values, norms, and ethics as well as professionalism and responsibility | Students are able to explain cybercrime trends | Presentation Quality; Performance | Student centred learning | Asynchronous | 1,2,3 | 10 |

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## SEMESTER LEARNING PLAN

| COURSE (MK) | CODE | Study Material (BK) | WEIGHT (credits) | | SEMESTER | Date of Preparation |
|---|---|---|---|---|---|---|
| Data Mining | INF028 | Data Structures, Algorithms and Complexity ; Computing Systems Fundamentals ; Graphics and Visualisation ; | T [Theory] = 3 | P[Practice] = 0 | (6) Six | 8 January 2024 |

| | Semester Learning Plan Developer | Study material Coordinator | Head of study programme |
|---|---|---|---|
| **RESPONSE** | Dhina Puspasari Wijaya, S.Kom., M.Kom | Dita Danianti, S.Kom., M.Kom | Dhina Puspasari Wijaya, S.Kom., M.Kom |

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| **Learning Outcomes** | **SLOs that are imposed on MKs** | |
| | CPL03 | Have adequate knowledge of how computer systems work and be able to apply/use various algorithms/methods to solve problems in an organisation. |
| | CPL08 | Ability to implement computing requirements by considering various appropriate methods/algorithms. |
| | **Course Learning Outcomes (CPMK)** | |
| | CPMK032 | Able to apply/use various methods/algorithms in solving problems in an organisation |
| | CPMK084 | Able to fulfil computing-based needs. |
| | **End ability of each learning stage (Sub-CPMK)** | |
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| Correlation of CPMK to Sub-CPMK | |
|---|---|

| Course Learning Outcomes | | Supported SLOs |
|---|---|---|
| **CPMK Code** | **Description of CPMK** | |
| CPMK032 | Able to apply/use various methods/algorithms in solving problems in an organisation | CPL03 |
| CPMK084 | Able to fulfil computing-based needs. | CPL08 |

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| **Brief description of the course** | This course discusses the basic concepts of solving informatics logic problems that are the basis for programming logic. In making a programme to solve certain problems, an informatics logic is needed so that the programme can be made with a structured model and can be used to solve existing problems. | |
| **Study Material:** Learning Materials | 1. Introduction to Data Mining<br>2. Trend data mining<br>3. Data mining applications<br>4. Data Exploration<br>5. Preprocessing and data measurement stages.<br>6. Statistics and data visualisation<br>7. OLAP Data Analysis<br>8. Classification algorithm naïve bayes classifier<br>9. C.45 classification algorithm<br>10. K-Nearest Neighbour classification algorithm.<br>11. A priori association algorithm.<br>12. FP Growth association algorithm<br>13. K-Means Algorithm<br>14. Linear Regression Algorithm. | |
| **Library** | **Main:** | |
| | [1]. Contrast Data Mining: Concepts, Algorithms, and Applications. (2016). United Kingdom: CRC Press. | |
| | **Supporters:** | |
| | [2] Meira, Jr, W., Meira, W., Zaki, M. J. (2014). Data Mining and Analysis: Fundamental Concepts and Algorithms. United Kingdom: Cambridge University Press.<br>[3] Ye, N. (2013). Data Mining: Theories, Algorithms, and Examples. United Kingdom: CRC Press.<br>[4] Educational Data Mining: Applications and Trends. (2013). Germany: Springer International Publishing.<br>[5] Roiger, R. J. (2017). Data Mining: A Tutorial-Based Primer, Second Edition. United Kingdom: CRC Press. | |
| **Lecturer** | Dhina Puspasari Wijaya, S.Kom., M.Kom | |
| **Prerequisite Courses** | Statistics and Probability | |

| Week 1 | End ability of each learning stage (Sub-CPMK) | Indicators | Criteria and Techniques | Form of Learning; Learning Methods; Student Assignments; [Time Estimation] | | Learning Materials [Library] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | Offline (5) | Online (6) | (7) | (8) |
| 1 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving problems in organisations | Students are able to explain the concept of data mining. | Accuracy of UTS Answers; Written Test (UTS) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 10 |
| 2 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving problems in organisations | Students are able to know the trend of data mining. | Accuracy of UTS Answers; Written Test (UTS) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 10 |
| 3 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving problems in organisations | Students are able to know the application of data mining. | Accuracy of UTS Answers; Written Test (UTS) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 10 |
| 4 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving problems in organisations | Students are able to explain and explore Data. | Accuracy of Answer; Participation (Attendance/Quiz) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 5 |
| 5 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving problems in organisations | Students are able to understand pre-processing and data measurement. | Accuracy of Answer; Participation (Attendance/Quiz) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 5 |
| 6 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving problems in organisations | Students are able to understand, explain, and perform about statistics and visualisation | Accuracy of Answer; Participation (Attendance/Quiz) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 5 |
| 7 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving problems in organisations | Students are able to understand and perform OLAP data analysis. | Accuracy of Answer; Participation (Attendance/Quiz) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 5 |
| 8 | Sub-CPMK0841 - Ability to meet the needs of social network analysis in related organisations. | Students are able to understand, explain, and use the naive bayes calcsifier classification algorithm. | Accuracy of UAS Answers; Written Test (UAS) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 10 |
| 9 | Sub-CPMK0841 - Ability to meet the needs of social network analysis in related organisations. | Students are able to understand, explain, and use the C.45 classification algorithm. | Accuracy of UAS Answers; Written Test (UAS) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 10 |

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| 10 | Sub-CPMK0841 - Ability to meet the needs of social network analysis in related organisations. | Students are able to understand, explain, and use<br><br>K- Nearest Neighbour classificatio n algorithm. | Accuracy of UAS Answers; Written Test (UAS) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 10 |
| 11 | Sub-CPMK0841 - Ability to meet the needs of social network analysis in related organisations. | Students are able to understand, explain, and use the a priori association algorithm. | Accuracy of Answer; Observation (Practice/Task) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 5 |
| 12 | Sub-CPMK0841 - Ability to meet the needs of social network analysis in related organisations. | Students are able to understand, explain, and use FP Growth association algorithm | Accuracy of Answer; Observation (Practice/Task) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 5 |
| 13 | Sub-CPMK0841 - Ability to meet the needs of social network analysis in related organisations. | Students are able to understand, explain, and use the K-Means Algorithm | Accuracy of Answer; Observation (Practice/Task) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 5 |
| 14 | Sub-CPMK0841 - Ability to meet the needs of social network analysis in related organisations. | Students are able to understand, explain, and use Linear Regression Algorithm. | Accuracy of Answer; Observation (Practice/Task) | Student Centre Learning | Asyncronous | 1,2,3,4,5 | 5 |

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## SEMESTER LEARNING PLAN

| **COURSE (MK)** | **CODE** | **Study Material (BK)** | **WEIGHT (credits)** | | **SEMESTER** | **Date of Preparation** |
|---|---|---|---|---|---|---|
| Big Data | INF043 | Data and Information Management ; Computing Systems Fundamentals ; | T [Theory] = 3 | P[Practice] = 0 | (6) Six | 23 August 2023 |

| | **Semester Learning Plan Developer** | **Study material Coordinator** | **Head of study programme** |
|---|---|---|---|
| **RESPONSE** | Wahit Desta Prastowo, S.Kom.,M.Kom | Dita Danianti, S.Kom., M.Kom | Dhina Puspasari Wijaya, S.Kom., M.Kom |

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| **Learning Outcomes** | **SLOs that are imposed on MKs** | |
| | CPL03 | Have adequate knowledge of how computer systems work and be able to apply/use various algorithms/methods to solve problems in an organisation. |
| | **Course Learning Outcomes (CPMK)** | |
| | CPMK031 | Able to understand how computer systems work |
| | **End ability of each learning stage (Sub-CPMK)** | |
| | | |

| Correlation of CPMK to Sub-CPMK | |
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| Course Learning Outcomes | | Supported SLOs |
|---|---|---|
| **CPMK Code** | **Description of CPMK** | |
| CPMK031 | Able to understand how computer systems work | CPL03 |

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| **Brief description of the course** | The Big Data course is one of the courses that provides an understanding of big data analytics, which refers to the process of collecting, organising and analysing big data to obtain patterns and useful information. | |
| **Study Material:** Learning Materials | BK06 - Data and Information Management<br>BK15 - Computing Systems Fundamentals | |
| **Library** | **Main:** | |
| | 1. P. B. P. D. M. K. M. van der Laan, Handbook of Big Data. 2016.<br>2. D. N. T. Sruthika.P, Handbook on Evolution of Analytics to Big Data Analytics. 2016.<br>3. Victor J. Isla, Install Big Data Step by Step. 2016.<br>4. M. A. Davy Cielen, Arno D.B. Meysman, Introducing Data Science. 2016.<br>5. S. S. Sumit Gupta, Real-Time Big Data Analytics. 2016. | |
| | **Supporters:** | |
| | - | |
| **Lecturer** | Wahit Desta Prastowo, S.Kom.,M.Kom | |
| **Prerequisite Courses** | - | |

| Week 1 | End ability of each learning stage (Sub-CPMK) | Indicators | Criteria and Techniques | Form of Learning; Learning Methods; Student Assignments; [Time Estimation] | | Learning Materials [Library] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | Offline (5) | Online (6) | (7) | (8) |
| 1 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the concept of big data, and types of big data. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 2 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the big data lifecycle | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 3 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the nature and complexity of big data. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 4 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the concept and application of data warehouse | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 5 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand data transformation strategies | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 6 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the application of graph database and conventional database | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 7 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand data complexity reduction strategies | Accuracy of UTS Answers; Written Test (UTS) | Student centred learning | Asynchronous | 1,2,3,4,5 | 10 |
| 8 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the concept and application of social network analysis | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 9 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the concept and application of data simulation models | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 10 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand regression analysis in data processing | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 11 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the concept and application of denormalisation | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 12 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the application of decision tree in data processing | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4 | 5 |
| 13 | Sub-CPMK0311 - Ability to understand how computer systems work | Able to understand the application of hadoop in data processing | Presentation Quality; Performance | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |

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| 14 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving organisational problems | Able to understand the application of map reduce in data processing | Accuracy of UAS Answers; Written Test (UAS) | Student centred learning | Asynchronous | 1,2,3,4,5 | 10 |

**ALMA ATA UNIVERSITY**

**FACULTY OF COMPUTER AND ENGINEERING**
**BACHELOR OF INFORMATICS ENGINEERING**
**STUDY PROGRAM**

## SEMESTER LEARNING PLAN

| COURSE (MK) | CODE | Study Material (BK) | WEIGHT (credits) | | SEMESTER | Date of Preparation |
|---|---|---|---|---|---|---|
| Expert System | INF046 | Data Structures, Algorithms and Complexity ; Computing Systems Fundamentals ; Intelligent Systems ; | T [Theory] | P [Practice] | (6) Six | *Not yet set* |

| RESPONSE | Semester Learning Plan Developer | Study Material Coordinator | Head of study programme |
|---|---|---|---|
| | *Not yet set* | *Not yet set* | *Not yet set* |

| Learning Outcomes | | |
|---|---|---|
| | **SLOs that are imposed on MKs** | |
| | CPL03 | Have adequate knowledge of how computer systems work and be able to apply/use various algorithms/methods to solve problems in an organisation. |
| | **Course Learning Outcomes (CPMK)** | |
| | CPMK032 | Able to apply/use various methods/algorithms in solving problems in an organisation |
| | **End ability of each learning stage (Sub-CPMK)** | |
| | | |

| Correlation of CPMK to Sub-CPMK | |
|---|---|

| Course Learning Outcomes | | Supported SLOs |
|---|---|---|
| **CPMK Code** | **Description of CPMK** | |
| CPMK032 | Able to apply/use various methods/algorithms in solving problems in an organisation | CPL03 |

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| **Brief description of the course** | *Not yet set* | |
| **Study Material:** Learning Materials | *Not yet set* | |
| **Library** | **Main:** | |
| | *Not yet set* | |
| | **Supporters:** | |
| | *Not yet set* | |
| **Lecturer** | Dhina Puspasari Wijaya, S.Kom., M.Kom | |
| **Prerequisite Courses** | - | |

| Week 1 | End ability of each learning stage (Sub-CPMK) | Indicators | Criteria and Techniques | Form of Learning; Learning Methods; Student Assignments; [Time Estimation] | | Learning Materials [Library] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | Offline (5) | Online (6) | (7) | (8) |

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## SEMESTER LEARNING PLAN

| COURSE (MK) | CODE | Study Material (BK) | WEIGHT (credits) | | SEMESTER | Date of Preparation |
|---|---|---|---|---|---|---|
| Natural Language Processing | INF047 | Data Structures, Algorithms and Complexity ; Intelligent Systems ; | T [Theory] = 3 | P[Practice] = 0 | (6) Six | 29 December 2023 |

| | Semester Learning Plan Developer | Study Material Coordinator | Head of study programme |
|---|---|---|---|
| **RESPONSE** | Andri Pramuntadi, S.Kom., M.Kom | Dita Danianti, S.Kom., M.Kom | Dhina Puspasari Wijaya, S.Kom., M.Kom |

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|---|---|---|
| **Learning Outcomes** | **SLOs that are imposed on MKs** | |
| | CPL03 | Have adequate knowledge of how computer systems work and be able to apply/use various algorithms/methods to solve problems in an organisation. |
| | **Course Learning Outcomes (CPMK)** | |
| | CPMK032 | Able to apply/use various methods/algorithms in solving problems in an organisation |
| | **End ability of each learning stage (Sub-CPMK)** | |
| | | |

| Correlation of CPMK to Sub-CPMK | |
|---|---|

| Course Learning Outcomes | | Supported SLOs |
|---|---|---|
| **CPMK Code** | **Description of CPMK** | |
| CPMK032 | Able to apply/use various methods/algorithms in solving problems in an organisation | CPL03 |

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|---|---|---|
| **Brief description of the course** | This Natural Language Processing course provides students with an understanding and mastery of human language script processing. | |
| **Study Material:** Learning Materials | Science and Technology Development | |
| **Library** | **Main:** | |
| | 1. Daniel Jurafsky & James H. Martin, Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition, 2nd Edition, Prentice Hall, 2008. | |
| | **Supporters:** | |
| | Lecturer dictates and assignments | |
| **Lecturer** | Andri Pramuntadi, S.Kom., M.Kom | |
| **Prerequisite Courses** | - | |

| Week 1 | End ability of each learning stage (Sub-CPMK) | Indicators | Criteria and Techniques | Form of Learning; Learning Methods; Student Assignments; [Time Estimation] | | Learning Materials [Library] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | Offline (5) | Online (6) | (7) | (8) |
| 1 | Sub-CPMK0321 - Natural Language Processing (NLP) concepts | Able to 1. Explain the Scope of NLP | Accuracy of Test Answers; Test Writing (UTS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | Discussion of the RPS and lecture contract Introduction and familiarity with the scope of NLP Benefits and trends of NLP | 5 |
| 2 | Able to perform the stages of document preprocessing and data scraping from several sources | Explaining the Stages of Document PreProcessing | Accuracy of Test Answers; Test Writing (UTS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | Document pre-processing stages: Parsing, Lexical Analysis, Stop-removal, phrase detection, stemming. | 2 |
| 3 | Able to perform the stages of document preprocessing and data scraping from several sources | Explaining the Weighting and indexing results of TF/IDF method | Accuracy of Test Answers; Test Writing (UTS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | Describe Classification of text documents: Naïve Bayes classification KNN Classification | 3 |
| 4 | -CPMK0323 - Able explain Basic Text Processing and categorise words from sentences by performing POS Tagging | Describe Classification of text documents: Naïve Bayes classification KNN Classification | Accuracy of Test Answers; Test Writing (UTS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | KNN Classification | 3 |
| 5 | -CPMK0323 - Able explain Basic Text Processing and categorise words from sentences by performing POS Tagging | Explain the Basic Text Process Technique | Accuracy of Test Answers; Test Writing (UTS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | 1. Normalisation<br>2. Lemmatisation<br>3. Stemming<br>4. Corpus<br>5. Document Term Matrix | 4 |
| 6 | -CPMK0323 - Able explain Basic Text Processing and categorise words from sentences by performing POS Tagging | Performing text classification: Naïve Bayes Classification, KNN Classification Methods | Accuracy of Test Answers; Test Writing (UTS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | 1. Naïve Bayes classification method<br>2. KNN Classification method | 3 |
| 7 | -CPMK0323 - Able explain Basic Text Processing and categorise words from sentences by performing POS Tagging | Able to 1. Explain POS Tagger and N-Gram Tagging<br>2. Simulate the categorising technique | Accuracy of Test Answers; Test Writing (UTS) | Lecture / Discovery Learning Simulation | Quiz / Elearning | 1. POS Tagger<br>2. N-Gram Taggin | 3 |
| 8 | Sub-CPMK0321 - Natural Language Processing (NLP) concepts | | Accuracy of Answers; Written Test (UTS) | Written Exam | | | 25 |
| 9 | -CPMK0324 - Students are able to understand how search engines work as an implementation of text processing in Information Retrieval (IR). | able to understand and explain the definition of Information Retrieval (IR) | Accuracy of Answers; Written Test (UTS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | Information Retrieval (IR) | 3 |
| 10 | -CPMK0324 - Students are able to understand how search engines work as an implementation of text processing in Information Retrieval (IR). | Explain the concept of sentiment analysis | Accuracy of UAS Answers; Test Writing (UAS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | 1. Introduction to Sentiment Analysis<br>2. Doing 2 sentiment classification<br>3. Proposed architecture<br>4. Twitter API | 3 |
| 11 | -CPMK0324 - Students are able to understand how search engines work as an implementation of text processing in Information Retrieval (IR). | Design sentiment analysis scenarios with twitter data | Accuracy of UAS Answers; Test Writing (UAS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | 1. Data Collection<br>2. Feature Extraction | 3 |

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|---|---|---|---|---|---|---|---|
| 12 | -CPMK0324 - Students are able to understand how search engines work as an implementation of text processing in Information Retrieval (IR). | Able to explain<br>1. Explaining the topic of modelling<br>2. Describe the concept of topic modelling | Accuracy of UAS Answers; Test Writing (UAS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | 1. Introduction to Topic Modelling<br>2. Latent Dirichlet Allocation | 3 |
| 13 | -CPMK0324 - Students are able to understand how search engines work as an implementation of text processing in Information Retrieval (IR). | Explain the purpose of the sentiment analysis model designed | Accuracy of UAS Answers; Test Writing (UAS) | Lecture / Discovery Learning Simulation | Quiz / Elearning | 1. Sentiment techniques and methods analysis<br>2. Modelling sentiment analysis<br>3. Model evaluation<br>4. Reporting Analysis | 3 |
| 14 | -CPMK0325 - Understand the process and implementation of Systematic review of NLP | Analysing the advantages and disadvantages of the designed model | Accuracy of UAS Answers; Test Writing (UAS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | 1. Sentiment techniques and methods analysis<br>2. Modelling sentiment analysis<br>3. Model evaluation<br>4. Reporting Analysis | 3 |
| 15 | -CPMK0325 - Understand the process and implementation of Systematic review of NLP | 1. Describe the findings of a systematic review<br>2. Draft publication paper | Accuracy of UAS Answers; Test Writing (UAS) | Lecture / Discovery Learning Simulation | Quiz/Elearning | 1. Systematic Review of NLP<br>2. Reporting<br>3. Writing a Publication Paper | 5 |
| 16 | -CPMK0325 - Understand the process and implementation of Systematic review of NLP | UAS | Accuracy of UAS Answers; Test Writing (UAS) | Written Exam | - | - | 30 |

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| Universitas Alma Ata<br>The Globe Inspiring University | **ALMA ATA UNIVERSITY**<br>**FACULTY OF COMPUTER AND ENGINEERING**<br>**BACHELOR OF INFORMATICS ENGINEERING STUDY PROGRAM** | |

## SEMESTER LEARNING PLAN

| **COURSE (MK)** | **CODE** | **Study Material (BK)** | **WEIGHT (credits)** | | **SEMESTER** | **Date of Preparation** |
|---|---|---|---|---|---|---|
| Internet Of Things | INF048 | Computing Systems Fundamentals; | T [Theory] = 3 | P[Practice] = 0 | (6) Six | 20 August 2023 |

| | **Semester Learning Plan Developer** | **Study Material Coordinator** | **Head of study programme** |
|---|---|---|---|
| **RESPONSE** | Deden Hardan Gutama, S.Kom., M.Kom | Dita Danianti, S.Kom., M.Kom | Dhina Puspasari Wijaya, S.Kom., M.Kom |

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| **Learning Outcomes** | **SLOs that are imposed on MKs** | |
| | CPL03 | Have adequate knowledge of how computer systems work and be able to apply/use various algorithms/methods to solve problems in an organisation. |
| | CPL04 | Have the competence to analyse complex computing problems to identify solutions for technology project management in the field of informatics/computer science by considering the insights of transdisciplinary science development. |
| | **Course Learning Outcomes (CPMK)** | |
| | CPMK032 | Able to apply/use various methods/algorithms in solving problems in an organisation |
| | CPMK041 | Able to identify complex computing problems |
| | **End ability of each learning stage (Sub-CPMK)** | |
| | | |

| Correlation of CPMK to Sub-CPMK | |
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| Course Learning Outcomes | | Supported SLOs |
|---|---|---|
| **CPMK Code** | **Description of CPMK** | |
| CPMK032 | Able to apply/use various methods/algorithms in solving problems in an organisation | CPL03 |
| CPMK041 | Able to identify complex computing problems | CPL04 |

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| **Brief description of the course** | In this course, students are challenged to follow trends and apply knowledge related to networking and computer organisation to understand how to design simple internet of things devices. | |
| **Study Material:** Learning Materials | Computing Systems Fundamentals | |
| **Library** | **Main:** | |
| | 1. Francis da Costa, 2013. Rethinking the internet of things.Apress.<br>2. Delicatio, Flavia C, et al, 2013 Middleware Solutions for internet of things. Springers.<br>3. Holler, Jan, 2014. From Machine to Machine to the internet of things, Elsevier | |
| | **Supporters:** | |
| | - | |
| **Lecturer** | Deden Hardan Gutama, S.Kom., M.Kom | |
| **Prerequisite Courses** | Algorithms and Programming | |

| Week 1 | End ability of each learning stage (Sub-CPMK) | Indicators | Criteria and Techniques | Form of Learning; Learning Methods; Student Assignments; [Time Estimation] | | Learning Materials [Library] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | Offline (5) | Online (6) | (7) | (8) |
| 1 | Sub-CPMK0411 - Ability to analyse complex computing problems | Students are able to understand the basic concepts of IoT Introduction | Quality of Presentation; Participation (Attendance/Quiz) | Student-Learning Centre | Asynchronous | 1,2,3 | 10 |
| 2 | Sub-CPMK0411 - Ability to analyse complex computing problems | Students are able to understand the basic concepts of IoT | Accuracy of Answer; Participation (Attendance/Quiz) | Student-Learning Centre | Asynchronous | 1,2,3 | 5 |
| 3 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving organisational problems | Students have an understanding of IoT theory in the IoT Components chapter | Accuracy of UAS Answers; Participation (Attendance/Quiz) | Student-Learning Centre | Asynchronous | | 15 |
| 4 | Sub-CPMK0411 - Ability to analyse complex computing problems | | Accuracy of Test Answers; Participation (Attendance/Quiz) | Student-Learning Centre | Asynchronous | | 5 |
| 5 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving organisational problems | Students have a critical view in the field of IoT Components | Quality of Presentation; Participation (Attendance/Quiz) | Student-Learning Centre | Asynchronous | 1,2 | 5 |
| 6 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving organisational problems | • Students have an understanding of IoT theory in the IoT Enabling Technologies chapter | Quality of Presentation; Participation (Attendance/Quiz) | Student-Learning Centre | Asynchronous | 1,2,3 | 5 |
| 7 | Sub-CPMK0411 - Ability to analyse complex computing problems | • Students are able to understand the concept of Basic IoT Communication Protocol | Accuracy of UAS Answers; Written Test (UAS) | Student-Learning Centre | Asynchronous | 1,2,3 | 5 |
| 8 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving organisational problems | Students have an understanding of Communication Protocol theory IoT | Accuracy of UAS Answers; Written Test (UAS) | Problem-Learning Centre | Asynchronous | 1,2,3 | 5 |
| 9 | Sub-CPMK0411 - Ability to analyse complex computing problems | • Students are able to understand the concept of basic Network IoT Technology | Accuracy of UAS Answers; Written Test (UAS) | Problem-Learning Centre | Asynchronous | 1,2,3 | 5 |
| 10 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving organisational problems | Students are able to understand the basic concepts of IoT Interopability | Accuracy of UAS Answers; Written Test (UAS) | Problem-Learning Centre | Asynchronous | 1,2,3 | 5 |

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|---|---|---|---|---|---|---|---|
| 11 | Sub-CPMK0411 - Ability to analyse complex computing problems | Students are able to understand the concept of basic IoT Platform | Accuracy of UAS Answers; Written Test (UAS) | Problem-Learning Centre | Asynchronous | 1,2,3 | 5 |
| 12 | Sub-CPMK0321 - Ability to apply/use various methods/algorithms in solving organisational problems | Students have an understandi ng of IoT theory in the Cloud Fundamentals chapter | Accuracy of UAS Answers; Written Test (UAS) | Problem-Learning Centre | Asynchronous | 1,2 | 10 |
| 13 | Sub-CPMK0411 - Ability to analyse complex computing problems | Students are able to understand the concept of Basic Industrial IoT | Accuracy of UAS Answers; Written Test (UAS) | Problem-Learning Centre | Asynchronous | 1,2 | 10 |
| 14 | Sub-CPMK0411 - Ability to analyse complex computing problems | Students have an understanding of the theory of IoT case studies | Accuracy of UAS Answers; Written Test (UAS) | Problem-Learning Centre | Asynchronous | 1,2 | 5 |

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## SEMESTER LEARNING PLAN

| **COURSE (MK)** | **CODE** | **Study Material (BK)** | **WEIGHT (credits)** | | **SEMESTER** | **Date of Preparation** |
|---|---|---|---|---|---|---|
| Game Development | INF058 | Platform-based Development; Software Engineering; | T [Theory] = 2 | P [Practice] = 1 | (6) Six | 21 December 2023 |

| | **Semester Learning Plan Developer** | **Study Material Coordinator** | **Head of study programme** |
|---|---|---|---|
| **RESPONSE** | Dita Danianti, S.Kom., M.Kom | Dita Danianti, S.Kom., M.Kom | Dhina Puspasari Wijaya, S.Kom., M.Kom |

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| **Learning Outcomes** | **SLOs that are imposed on MKs** | |
| | CPL05 | Mastering the theoretical concepts of Computer Science / Informatics knowledge in designing and simulating multi-platform technology applications that are relevant to the needs of industry and society. |
| | CPL10 | Ability to design, implement and evaluate multi-platform computing-based solutions that meet the computing needs of an organisation. |
| | **Course Learning Outcomes (CPMK)** | |
| | CPMK052 | Able to master the theoretical concepts of Computer Science/Informatics knowledge in simulating multi-platform technology applications |
| | CPMK102 | Able to implement multiplatform computing-based solutions. |
| | **End ability of each learning stage (Sub-CPMK)** | |
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| Correlation of CPMK to Sub-CPMK | |
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| Course Learning Outcomes | | Supported SLOs |
|---|---|---|
| **CPMK Code** | **Description of CPMK** | |
| CPMK052 | Able to master the theoretical concepts of Computer Science/Informatics knowledge in simulating multi-platform technology applications | CPL05 |
| CPMK102 | Able to implement multiplatform computing-based solutions. | CPL10 |

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| **Brief description of the course** | The Game Development course provides knowledge of the steps making games. The scope of this course includes the definition of games, traditional games, digital games, game events and product examples, history of games, game genres, formal and dramatic elements of games, game design and game designers, game design documents. | |
| **Study Material:** Learning Materials | Definition of games, traditional games, digital games, game events and product examples, history of games, game genres, formal and dramatic elements of games, game design and game designers, game design document. | |
| **Library** | **Main:** | |
| | 1. Novak, J. (2012). Game Development Essentials (third edition). New York: Delmar | |
| | **Supporters:** | |
| | 2. Schell, J. (2015). The Art of Game Design: A book of Lenses (second edition). Florida: CRC Press<br>3. Jason Gregory. 2018. Game Engine Architecture, Third Edition 3rd Edition. A K Peters/CRC Press | |
| **Lecturer** | Dita Danianti, S.Kom., M.Kom | |
| **Prerequisite Courses** | - | |

| Week 1 | End ability of each learning stage (Sub-CPMK) | Indicators | Criteria and Techniques | Form of Learning; Learning Methods; Student Assignments; [Time Estimation] | | Learning Materials [Library] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | Offline (5) | Online (6) | (7) | (8) |
| 1 | Ability to understand the theory of software engineering field in simulating multi-platform technology applications | Students are able to explain the definition of game | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 2 | Ability to understand the theory of software engineering field in simulating multi-platform technology applications | Students are able to explain understand the types of games based on their platforms and genres in games | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 3 | Ability to understand the theory of software engineering field in simulating multi-platform technology applications | Students understand Game Elements: Formal and Dramatic | Accuracy of Answer; Participation (Attendance/Quiz) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 4 | Ability to understand the theory of software engineering field in simulating multi-platform technology applications | Students are able to explain game design and game designers | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 5 |
| 6 | Ability to understand the theory of software engineering field in simulating multi-platform technology applications | Students understand the tools for making Game Development | Accuracy of Answers; Written Test (UTS) | Student centred learning | Asynchronous | 1,2,3 | 15 |
| 7 | Ability to understand the theory of software engineering field in simulating multi-platform technology applications | Students understand how unity works | Accuracy of Answers; Written Test (UTS) | Student centred learning | Asynchronous | 1,2,3 | 15 |
| 8 | Ability to implement software that supports multi-platform technology in an organisation. | Students are able to understand story and character creation | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 6 |
| 9 | Ability to implement software that supports multi-platform technology in an organisation. | Students are able to understand the making of game rules | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 6 |
| 10 | Ability to implement software that supports multi-platform technology in an organisation. | Students are able to understand level design | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 6 |
| 11 | Ability to implement software that supports multi-platform technology in an organisation. | Students are able to understand interface design in games | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 6 |
| 12 | Ability to implement software that supports multi-platform technology in an organisation. | Students are able to understand the formats and types of audio in games | Accuracy of Answer; Observation (Practice/Task) | Student centred learning | Asynchronous | 1,2,3 | 6 |

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|---|---|---|---|---|---|---|---|
| 13 | Ability to implement software that supports multi-platform technology in an organisation. | Students are able to understand the role of the team in making games | Accuracy of Answer; Written Test (UAS) | Student centred learning | Asynchronous | 1,2,3 | 10 |
| 14 | Ability to implement software that supports multi-platform technology in an organisation. | Students are able to explain the concept of<br>game creation ideas | Accuracy of Answer; Written Test (UAS) | Student centred learning | Asynchronous | 1,2,3 | 10 |

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## SEMESTER LEARNING PLAN

| **COURSE (MK)** | **CODE** | **Study Material (BK)** | **WEIGHT (credits)** | | **SEMESTER** | **Date of Preparation** |
|---|---|---|---|---|---|---|
| Pancasila | UAA006 | Social Issues and Professional Practice; | T [Theory] = 2 | P[Practice] = 0 | (6) Six | 23 August 2023 |

| | **Semester Learning Plan Developer** | **Study Material Coordinator** | **Head of study programme** |
|---|---|---|---|
| **RESPONSE** | Wahit Desta Prastowo, S.Kom.,M.Kom | Dita Danianti, S.Kom., M.Kom | Dhina Puspasari Wijaya, S.Kom., M.Kom |

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| **Learning Outcomes** | **SLOs that are imposed on MKs** | |
| | CPL01 | Pious to God Almighty, law-abiding, and disciplined in social and state life. |
| | **Course Learning Outcomes (CPMK)** | |
| | CPMK013 | Able to apply discipline in social and state life. |
| | **End ability of each learning stage (Sub-CPMK)** | |
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| Correlation of CPMK to Sub-CPMK | |
|---|---|

| Course Learning Outcomes | | Supported SLOs |
|---|---|---|
| **CPMK Code** | **Description of CPMK** | |
| CPMK013 | Able to apply discipline in social and state life. | CPL01 |

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| **Brief description of the course** | The Pancasila course is a compulsory course that provides a scientific basis for students of the Informatics study programme. After studying the Pancasila Education course, students are expected to be able to understand the foundation and objectives of Pancasila Education, Pancasila in the context of the history of the struggle of the Indonesian nation, Pancasila as a system of philosophy, Pancasila as political ethics and national ideology, Pancasila in the context of Indonesian state administration and Pancasila as a paradigm of life in society, nation and state. | |
| **Study Material:** Learning Materials | BK01 - Social Issues and Professional Practice | |
| **Library** | **Main:** | |
| | 1. R. S. Al-Jihad, Pancasila World Ideology: A Synthesis of Capitalism, Socialism, 2018.<br>2. A. S. Rahayu, Pancasila and Citizenship Education (PPKn), 2017.<br>3. K. et al. Basyir, "Lecture Book for IAIN Sunan Ampel Surabaya's S-1 Programme in Personality Development (MPK)," p. 450, 2013.<br>4. Taufiqurrahman, Pancasila Education. 2018.<br>5. Soekarno, Pancasila as the State Foundation: A Course on Pancasila by President Soekarno, Gadjah Mada University Press, 2017. | |
| | **Supporters:** | |
| | - | |
| **Lecturer** | Wahit Desta Prastowo, S.Kom.,M.Kom | |
| **Prerequisite Courses** | - | |

| Week 1 | End ability of each learning stage (Sub-CPMK) | Indicators | Criteria and Techniques | Form of Learning; Learning Methods; Student Assignments; [Time Estimation] | | Learning Materials [Library] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | Offline (5) | Online (6) | (7) | (8) |
| 1 | Sub-CPMK0131 - Ability to understand the life of society and the state | Able to define introduction to Pancasila, basic concepts of Pancasila, terms in Pancasila. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 2 | Sub-CPMK0131 - Ability to understand the life of society and the state | Able to define an introduction to Pancasila, and its relation to Pancasila Education. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 3 | Sub-CPMK0131 - Ability to understand the life of society and the state | Able to define the value of Pancasila during the Japanese, Dutch colonialism. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 4 | Sub-CPMK0131 - Ability to understand the life of society and the state | Able to define the value of Pancasila in the Independence era. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 5 | Sub-CPMK0131 - Ability to understand the life of society and the state | Able to explain Pancasila as a development paradigm. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 6 | Sub-CPMK0131 - Ability to understand the life of society and the state | Able to explain Pancasila as a philosophical system. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 7 | Sub-CPMK0131 - Ability to understand the life of society and the state | Able to explain Pancasila as political ethics. | Accuracy of UTS Answers; Written Test (UTS) | Student centred learning | Asynchronous | 1,2,3,4,5 | 10 |
| 8 | Sub-CPMK0132 - Ability to apply ICT laws and policies | Able to explain Pancasila as the value of science and technology development. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 9 | Sub-CPMK0132 - Ability to apply ICT laws and policies | Able to explain Pancasila as the state ideology. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 10 | Sub-CPMK0132 - Ability to apply ICT laws and policies | Able to compare Pancasila as a state ideology with other ideologies. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 11 | Sub-CPMK0132 - Ability to apply ICT laws and policies | Able to explain the position of Pancasila in the old order, new order and in the reformation period. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |

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|---|---|---|---|---|---|---|---|
| 12 | Sub-CPMK0132 - Ability to apply ICT laws and policies | Able to define the actualisation of Pancasila values in academic life. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 13 | Sub-CPMK0132 - Ability to apply ICT laws and policies | Able to define the actualisation of Pancasila values in the learning process. | Practical Results; Observation (Practical/Assignment) | Student centred learning | Asynchronous | 1,2,3,4,5 | 5 |
| 14 | Sub-CPMK0132 - Ability to apply ICT laws and policies | Able to define the perspective of Pancasila on Islamic teachings. | Accuracy of UAS Answers; Written Test (UAS) | Student centred learning | Asynchronous | 1,2,3,4,5 | 10 |