

# Module Handbook

## Medical Database and Optimization



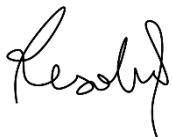
## Bachelor Degree Program Department of Biomedical Engineering

Faculty of Intelligent Electrical Technology and Informatics  
Institut Teknologi Sepuluh Nopember



**MODULE HANDBOOK**  
**Medical Database and Optimization**  
**DEPARTMENT OF BIOMEDICAL ENGINEERING**  
 INSTITUT TEKNOLOGI SEPULUH NOPEMBER  
 Number : 6864/IT2.IX.5.1.2/B/PP.03.00.00/2023

**ENDORSEMENT PAGE**

| Proses<br><i>Process</i>                                | Penanggung Jawab<br><i>Person in Charge</i> |                                                      |                                                                                      | Tanggal<br><i>Date</i> |
|---------------------------------------------------------|---------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------|
|                                                         | Nama<br><i>Name</i>                         | Jabatan<br><i>Position</i>                           | Tandatangan<br><i>Signature</i>                                                      |                        |
| Perumus<br><i>Preparation</i>                           | Ir. Siti Halimah Baki, M.T.                 | Dosen<br><i>Lecturer</i>                             |    | November 18, 2022      |
| Pemeriksa dan Pengendalian<br><i>Review and Control</i> | Dr. Achmad Arifin, S.T., M.Eng.             | Tim kurikulum<br><i>Curriculum team</i>              |    | November 20, 2022      |
| Persetujuan<br><i>Approval</i>                          | Ir. Josaphat Pramudijanto, M.Eng.           | Koordinator RMK<br><i>Course Cluster Coordinator</i> |     | April 13, 2023         |
| Penetapan<br><i>Determination</i>                       | Dr. Achmad Arifin, S.T., M.Eng.             | Kepala Departemen<br><i>Head of Department</i>       |  | April 17, 2023         |

+

# MODULE HANDBOOK

## MEDICAL DATABASE AND OPTIMIZATION

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                  |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Module name                                           | <b>Medical Database and Optimization</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                  |
| Module level                                          | Undergraduate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                  |
| Code                                                  | EB234911                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                  |
| Course (if applicable)                                | Probability and Statistics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                  |
| Semester                                              | Specialization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |
| Person responsible for the module                     | Dr. Norma Hermawan, S.T., M. T., M.Sc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                  |
| Lecturer                                              | Dr. Norma Hermawan, S.T., M. T., M.Sc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                  |
| Language                                              | Bahasa Indonesia and English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                  |
| Relation to curriculum                                | Undergraduate degree program, <b>Specialization</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                  |
| Type of teaching, contact hours                       | Lectures, <60 students<br>Tuesdays, 11.00-12.50 (GMT+7)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                  |
| Workload                                              | 1. Lectures : 3 x 50 = 150 minutes per week.<br>2. Exercises and Assignments : 3 x 50 = 150 minutes per week.<br>3. Private learning : 3 x 50 = 150 minutes per week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                  |
| Credit points                                         | 3 credit points (sks)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                  |
| Requirements according to the examination regulations | A student must have attended at least 75% of the lectures to sit in the exams.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |
| Mandatory prerequisites                               | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                  |
| Learning outcomes and their corresponding PLOs        | <p>Course Learning Outcome (CLO) after completing this module,</p> <p>CLO 1: Students are able to describe the relationship between clinical data</p> <p>CLO 2: students can use electronic health records to make clinical decision aids (eg comparing different treatment techniques).</p> <p>CLO 3: Students are able to design medical database (patient registration, repository of error medication, medical history, etc).</p> <p>CLO 4: Students are able to import, export and linking data table across platform .</p> <p>CLO 5: Students can create queries and reports to describe complicated laws between fields (variables) in the health database.</p> <p>CLO 6: Students can analyze, merge, and query health databases to generate new information.</p> | <p>PLO-05</p> <p>PLO-02</p> <p>PLO-02</p> <p>PLO-06<br/>PLO-02</p> <p>PLO-06</p> |

|                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
|                                                             | CLO 7: Students can optimize data structures and tables that eliminate duplication, unused data entry, and data obscurity.                                                                                                                                                                                                                                                                                                                                                                                                                | PLO-10 |
| Content                                                     | This course studies understanding about history of database and database type with database implementation for medical application and optimize and database uses for assist doctor in making clinical decision.                                                                                                                                                                                                                                                                                                                          |        |
| Study and examination requirements and forms of examination | <ul style="list-style-type: none"> <li>• In-class exercises</li> <li>• Assignment 1, 2, 3</li> <li>• Mid-term examination</li> <li>• Final examination</li> </ul>                                                                                                                                                                                                                                                                                                                                                                         |        |
| Media employed                                              | LCD, whiteboard, websites (myITS Classroom), zoom.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |
| Reading list                                                | <p>Main :</p> <ol style="list-style-type: none"> <li>1. Kathryn J. Hannah, Marion J. Ball (Ed.), <i>Computer Medical Databases: The First Six Decades (1950–2010)</i>. Springer, London, 2012.</li> <li>2. Robert Sheldon, Geoff Moes, <i>Beginning MySQL<sup>®</sup></i>. Wiley Publishing, Inc., Indianapolis, 2005.</li> <li>3. Michael J. Hernandez, <i>Database Design for Mere Mortals: A Hands-On Guide to Relational Database Design (3rd Edition)</i>. Addison-Wesley, New Jersey, 2013.</li> </ol> <p>Supporting :</p> <p>-</p> |        |

I. Rencana Pembelajaran Semester / *Semester Learning Plan*

|                                                                                   |                                                                                                                                                                                                                                                                           |                                                                                                                                               |                                                              |            |                                                    |                                                              |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------|----------------------------------------------------|--------------------------------------------------------------|
|  | <p style="text-align: center;"><b>INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)</b></p> <p style="text-align: center;"><b>FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY</b></p> <p style="text-align: center;"><b>DEPARTMENT OF BIOMEDICAL ENGINEERING</b></p> |                                                                                                                                               |                                                              |            |                                                    | <p style="text-align: center;"><b>Documen<br/>t Code</b></p> |
|                                                                                   | <p><b>SEMESTER LEARNING<br/>PLAN</b></p>                                                                                                                                                                                                                                  |                                                                                                                                               |                                                              |            |                                                    |                                                              |
| <p><b>MATA KULIAH (MK)</b><br/><i>COURSE</i></p>                                  | <p><b>KODE<br/>CODE</b></p>                                                                                                                                                                                                                                               | <p><b>Rumpun MK<br/>Course Cluster</b></p>                                                                                                    | <p><b>BOBOT<br/>(sks) Credits</b></p>                        |            | <p><b>SEMESTER</b></p>                             | <p><b>Tgl Penyusunan<br/>Compilation Date</b></p>            |
| <p>Database Medika dan Optimasi<br/><i>Medical Database and Optimization</i></p>  | <p>EB234911</p>                                                                                                                                                                                                                                                           | <p>Ilmu Dasar Teknik<br/><i>Basic Engineering</i></p>                                                                                         | <p>T=3</p>                                                   | <p>P=0</p> | <p>Specializat<br/>ion</p>                         | <p>Nov 9, 2023</p>                                           |
| <p><b>OTORISASI / PENGESAHAN<br/>AUTHORIZATION / ENDORSEMENT</b></p>              | <p><b>Dosen Pengembang RPS<br/>Developer Lecturer of Semester Learning Plan</b></p>                                                                                                                                                                                       |                                                                                                                                               | <p><b>Koordinator RMK<br/>Course Cluster Coordinator</b></p> |            | <p><b>Ka DEPARTEMEN<br/>Head of Department</b></p> |                                                              |
|                                                                                   | <p>(Dr. Norma Hermawan, S. T., M. T., M.Sc.)</p>                                                                                                                                                                                                                          |                                                                                                                                               | <p>(Ir. Josaphat Pramudijanto,<br/>M.Eng.)</p>               |            | <p>(Dr. Achmad Arifin, S.T., M.Eng.)</p>           |                                                              |
| <p><b>Capaian<br/>Pembelajaran</b></p> <p><i>Learning<br/>Outcomes</i></p>        | <p><b>CPL-PRODI yang dibebankan pada MK<br/>PLO Program Charged to The Course</b></p>                                                                                                                                                                                     |                                                                                                                                               |                                                              |            |                                                    |                                                              |
|                                                                                   | <p>CPL-02</p>                                                                                                                                                                                                                                                             | <p>Mampu <b>menerapkan</b> ilmu pengetahuan, keterampilan, dan metode terkini dalam menyelesaikan permasalahan di bidang Teknik Biomedika</p> |                                                              |            |                                                    |                                                              |

|  |        |                                                                                                                                                                                                                                                                                                                                     |
|--|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | PLO-02 | <i>Able to apply the latest knowledge, skills and methods in solving problems in the field of Biomedical Engineering</i>                                                                                                                                                                                                            |
|  | CPL-05 | Mampu <b>menemukan, memahami, menjelaskan, merumuskan, dan menyelesaikan</b> permasalahan umum pada bidang Teknik dan permasalahan khusus pada bidang Teknik Biomedika yang meliputi instrumentasi biomedika cerdas, teknik rehabilitasi medika, pencitraan dan pengolahan citra medika, serta informatika medika                   |
|  | PLO-05 | <i>Able to find, understand, explain, formulate, and solve general problems in the field of Engineering and special problems in the field of Biomedical Engineering which includes intelligent biomedical instrumentation, medical rehabilitation techniques, imaging and processing of medical images, and medical informatics</i> |
|  | CPL-06 | Mampu <b>merancang dan melaksanakan</b> eksperimen laboratorium dan/atau lapangan, <b>menganalisa dan menginterpretasi</b> data, serta menggunakan penilaian yang obyektif untuk menarik kesimpulan                                                                                                                                 |
|  | PLO-06 | <i>Able to design and implement laboratory experiment and / or field experiments, analyze and interpret data, and use objective assessments to draw conclusions</i>                                                                                                                                                                 |

|  |                                                                                                                                                                                |                                                                                                                                                                                                                                                                                      |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | CPL-10                                                                                                                                                                         | Mampu <b>bekerja dalam tim</b> lintas disiplin dan budaya serta <b>bertanggung jawab</b> kepada masyarakat dan <b>mematuhi hukum dan etika profesi</b> dalam menyelesaikan masalah Teknik Biomedika                                                                                  |
|  | PLO-10                                                                                                                                                                         | <i>Able to work in interdisciplinary and intercultural teams and be responsible to the community and comply with legal and professional ethics in solving Biomedical Engineering problems</i>                                                                                        |
|  | <b>Capaian Pembelajaran Mata Kuliah (CPMK)</b><br><b>Course Learning Outcome (CLO) - If CLO as description capability of each Learning Stage in the course, then CLO = LLO</b> |                                                                                                                                                                                                                                                                                      |
|  | <b>CP MK 1</b><br><b>CLO 1</b>                                                                                                                                                 | Mahasiswa mampu menggambarkan hubungan antar data klinis.<br><i>Students are able to describe the relationship between clinical data.</i>                                                                                                                                            |
|  | <b>CP MK 2</b><br><b>CLO 2</b>                                                                                                                                                 | Mahasiswa dapat menggunakan catatan kesehatan elektronik untuk membuat bantuan keputusan klinis (misl. Membandingkan berbagai teknik pengobatan).<br><i>Students can use electronic health records to make clinical decision aids (eg comparing different treatment techniques).</i> |
|  | <b>CP MK 3</b><br><b>CLO 3</b>                                                                                                                                                 | Mahasiswa mampu mendesain database kesehatan(pendaftaran pasien, repository kesalahan pengobatan, riwayat kesehatan, dll.)<br><i>Students are able to design medical database (patient registration, repository of error medication, medical history, etc).</i>                      |
|  | <b>CP MK 4</b><br><b>CLO 4</b>                                                                                                                                                 | Mahasiswa dapat melakukan import, Export, dan menghubungkan table data lintas platform.<br><i>Students are able to import, export and linking data table across platform .</i>                                                                                                       |
|  | <b>CP MK 5</b><br><b>CLO 5</b>                                                                                                                                                 | Mahasiswa dapat membuat queries dan reports untuk menggambarkan hukum rumit diantara field(variable) di database kesehatan.<br><i>Students can create queries and reports to describe complicated laws between fields (variables) in the health database.</i>                        |
|  | <b>CP MK 6</b><br><b>CLO 6</b>                                                                                                                                                 | Mahasiswa dapat menganalisis, melakukan merge dan query database kesehatan untuk menghasilkan informasi baru.<br><i>Students can analyze, merge, and query health databases to generate new information.</i>                                                                         |
|  | <b>CP MK 7</b><br><b>CLO 7</b>                                                                                                                                                 | Mahasiswa dapat mengoptimisasi struktur data dan table yang mengeliminir duplikasi, entri data tak terpakai, dan ketidakjelasan data.<br><i>Students can optimize data structures and tables that eliminate duplication, unused data entry, and data obscurity.</i>                  |



|                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                       |                                                  |                        |
|-----------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------|------------------------|
| <b>Bahan Kajian:</b><br>Materi pembelajaran<br><br><b>Course Materials:</b> |  | <ol style="list-style-type: none"><li>1. Pengantar evolusi database/<i>Introduction To Database Evolution</i></li><li>2. Riwayat kesehatan elektronik/<i>Electronic Medical history</i></li><li>3. Menentukan persyaratan sistem/<i>Determine system requirement</i></li><li>4. Pemodelan data (ER diagram)/<i>Data Modelling</i></li><li>5. Table dan record/<i>Table and record</i></li><li>6. Query</li><li>7. Bahasa Query Standar (DDL &amp; DML)</li><li>8. Pemodelan relationship/<i>Modelling Relationship</i></li><li>9. Relationship dan primary key/<i>Relationship and Primary key</i></li><li>10. Normalisasi database/<i>Database Normalization</i></li></ol> |                                                                       |                                                  |                        |
| <b>Pustaka</b><br><br><b>References</b>                                     |  | <b>Utama / Main:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                       |                                                  |                        |
|                                                                             |  | <ol style="list-style-type: none"><li>1. Kathryn J. Hannah, Marion J. Ball (Ed.), <i>Computer Medical Databases: The First Six Decades (1950-2010)</i>. Springer, London, 2012.</li><li>2. Robert Sheldon, Geoff Moes, <i>Beginning MySQL®</i>. Wiley Publishing, Inc., Indianapolis, 2005.</li><li>3. Michael J. Hernandez, <i>Database Design for Mere Mortals: A Hands-On Guide to Relational Database Design (3rd Edition)</i>. Addison-Wesley, New Jersey, 2013.</li></ol>                                                                                                                                                                                             |                                                                       |                                                  |                        |
|                                                                             |  | <b>Pendukung / Supporting:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                       |                                                  |                        |
| <b>Dosen Pengampu</b><br><b>Lecturers</b>                                   |  | Norma Hermawan, S.T., M. T.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                       |                                                  |                        |
| <b>Matakuliah syarat</b><br><b>Prerequisite</b>                             |  | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                       |                                                  |                        |
| <b>Mg ke/<br/>Week</b>                                                      |  | <b>Penilaian / Assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa;</b> | <b>Materi Pembelajaran</b><br><b>[Pustaka] /</b> | <b>Bobot Penilaian</b> |

|     | Kemampuan akhir tiap tahapan belajar (Sub-CPMK) /<br><i>Final ability of each learning stage (LLO)</i>                                       | Indikator /<br><i>Indicator</i>                                                                                                                                                                | Kriteria & Teknik /<br><i>Criteria &amp; Techniques</i>                                                                  | [ Estimasi Waktu ] /<br><i>Form of Learning; Learning Method; Student Assignment; [ Estimated Time]</i>                                                                                                                                 |                                                                                                                                          | <i>Learning Material [Reference]</i>                                                                                                | <i>/Assessment Load (%)</i> |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| (1) | (2)                                                                                                                                          | (3)                                                                                                                                                                                            | (4)                                                                                                                      | Tatap Muka /<br><i>In-class (5)</i>                                                                                                                                                                                                     | Daring /<br><i>Online (6)</i>                                                                                                            | (7)                                                                                                                                 | (8)                         |
| 1,2 | Mahasiswa mampu menggambarkan hubungan antar data klinis.<br><br><i>Students are able to describe the relationship between clinical data</i> | <ul style="list-style-type: none"> <li>• Mahasiswa mampu memahami dan menjelaskan evolusi database</li> <li>• <i>Student able to interpret and explain about database evolution</i></li> </ul> | <b>Non-tes :</b><br>Diskusi<br>Tugas<br>Presentasi<br><br><b>Non-test :</b><br><i>Discussion Assignment Presentation</i> | <ul style="list-style-type: none"> <li>• Kuliah dan diskusi<br/>[TM : 3 x 50"]<br/>[BM : 3 x 50"]<br/>[PT : 3 x 50"]</li> <li>• <i>Presentation and brainstorming . [FF : 3 x 50"]<br/>[SA : 3 x 50"]<br/>[SS : 3 x 50"]</i></li> </ul> | <ul style="list-style-type: none"> <li>• Belajar mandiri melalui Share ITS.</li> <li>• <i>Self learning through Share ITS</i></li> </ul> | <ul style="list-style-type: none"> <li>• Pengantar evolusi database</li> <li>• <i>Introduction to database evolution</i></li> </ul> | 5                           |

|            |                                                                                          |                                                                                                   |                                                    |                                                                                                                                                       |                                                                                      |                              |          |
|------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------|----------|
| <b>3-4</b> | Mahasiswa dapat menggunakan catatan kesehatan elektronik untuk membuat bantuan keputusan | <ul style="list-style-type: none"> <li>Mahasiswa dapat membandingkan riwayat kesehatan</li> </ul> | <b>Non-tes :</b><br>Diskusi<br>Tugas<br>Presentasi | <ul style="list-style-type: none"> <li>Kuliah dan diskusi<br/>               [TM : 3 x 50"]<br/>               [BM : 3 x 50"]             </li> </ul> | <ul style="list-style-type: none"> <li>Belajar mandiri melalui Share ITS.</li> </ul> | Riwayat kesehatan elektronik | <b>4</b> |
|------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------|----------|

|     |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                  |                                                                                                                                      |                                                                                                                                                                                                                     |                                                                                                                                          |                                                                                                                                      |    |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----|
|     | <p>klinis (misl. Membandingkan berbagai teknik pengobatan.</p> <p><i>Students can use electronic health records to make clinical decision aids (eg comparing different treatment techniques).</i></p>                                                                       | <p>elektronik dan membuat bantuan keputusan klinis</p> <ul style="list-style-type: none"> <li>• <i>Students can compare electronic medical history and make clinical decision aids</i></li> </ul>                                | <p><b>Non-test :</b><br/>Discussion<br/>Assignment<br/>Presentation</p>                                                              | <p>[PT : 3 x 50"]</p> <ul style="list-style-type: none"> <li>• <i>Presentation and brainstorming . [FF : 3 x 50"] [SA : 3 x 50"] [SS : 3 x 50"]</i></li> </ul>                                                      | <ul style="list-style-type: none"> <li>• <i>Self learning through Share ITS</i></li> </ul>                                               | <p><i>Electronic medical history</i></p>                                                                                             |    |
| 5   | <p>Mahasiswa mampu mendesain database kesehatan(pendaftaran pasien, repository kesealahan pengobatan, riwayat kesehatan, dll.)</p> <p><i>Students are able to design medical database (patient registration, repository of error medication, medical history, etc).</i></p> | <ul style="list-style-type: none"> <li>• Mahasiswa mampu memahami dan menentukan persyaratan sistem pemodelan data ER</li> <li>• <i>Student able to understand and determine system requirement data modelling ER</i></li> </ul> | <p><b>Non-tes :</b><br/>Diskusi<br/>Tugas<br/>Presentasi</p> <p><b>Non-test :</b><br/>Discussion<br/>Assignment<br/>Presentation</p> | <ul style="list-style-type: none"> <li>• Kuliah dan diskusi [TM : 3 x 50"] [BM : 3 x 50"] [PT : 3 x 50"]</li> <li>• <i>Presentation and brainstorming . [FF : 3 x 50"] [SA : 3 x 50"] [SS : 3 x 50"]</i></li> </ul> | <ul style="list-style-type: none"> <li>• Belajar mandiri melalui Share ITS.</li> <li>• <i>Self learning through Share ITS</i></li> </ul> | <p>Menentukan persyaratan sistem Pemodelan data (ER diagram)</p> <p><i>Determining data model system requirement (ER diagram</i></p> | 12 |
| 6-7 | <p>Mahasiswa dapat melakukan import, Export, dan menghubungkan table data lintas platform.</p>                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Mahasiswa mampu membuat dan menjelaskan table dan query</li> <li>• <i>Student able to make and explain table and query</i></li> </ul>                                                   | <p><b>Non-tes :</b><br/>Diskusi<br/>Tugas<br/>praktikum</p> <p><b>Non-test :</b><br/>Discussion<br/>Assignment</p>                   | <ul style="list-style-type: none"> <li>• Kuliah dan diskusi [TM : 3 x 50"] [BM : 3 x 50"] [PT : 3 x 50"]</li> <li>• <i>Lecturing</i></li> </ul>                                                                     | <ul style="list-style-type: none"> <li>• Belajar mandiri melalui Share ITS.</li> <li>• <i>Self learning through Share ITS</i></li> </ul> | <p>Table dan record Query</p> <p><i>Table and quarry record</i></p>                                                                  |    |

|  |  |  |  |                            |  |  |  |
|--|--|--|--|----------------------------|--|--|--|
|  |  |  |  | <i>and<br/>discussion.</i> |  |  |  |
|--|--|--|--|----------------------------|--|--|--|

|               |                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                        |                                                                                                                                                                                                                                      |                                                                                                                                          |     |           |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------|
|               | <i>Students are able to import, export and linking data table across platform</i>                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>practicum</i>                                                                                                                       | <i>[FF : 3 x 50"]<br/>[SA : 3 x 50"]<br/>[SS : 3 x 50"]</i>                                                                                                                                                                          |                                                                                                                                          |     |           |
| <b>8</b>      | <b>EVALUASI TENGAH SEMESTER</b><br><b>MID-SEMESTER EXAM</b>                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                        |                                                                                                                                                                                                                                      |                                                                                                                                          |     | <b>30</b> |
| <b>9 - 10</b> | <p>Mahasiswa dapat membuat queries dan reports untuk menggambarkan hukum rumit diantara field(variable) di database kesehatan.</p> <p><i>Students can create queries and reports to describe complicated laws between fields (variables) in the health database.</i></p> | <ul style="list-style-type: none"> <li>• Ketepatan waktu pengumpulan tugas</li> <li>• Kebenaran melaksanakan tugas</li> <li>• Keberhasilan menjelaskan tugas</li> <li>• Kebenaran jawaban dan analisis</li> <li>• Kelengkapan dan kerapian hasil laporan</li> <li>• Ketepatan waktu pengumpulan laporan praktikum</li> <li>• Kebenaran menjelaskan proyek praktikum</li> <li>• <i>On time submission of assignment</i></li> <li>• <i>Correctness of the assignment</i></li> </ul> | <p><b>Non-tes :</b><br/>Diskusi<br/>Tugas praktikum</p> <p><b>Non-test :</b><br/><i>Discussion Assignment</i><br/><i>practicum</i></p> | <ul style="list-style-type: none"> <li>• Kuliah dan diskusi<br/>[TM : 3 x 50"]<br/>[BM : 3 x 50"]<br/>[PT : 3 x 50"]</li> <li>• <i>Lecturing and discussion.</i><br/>[FF : 3 x 50"]<br/>[SA : 3 x 50"]<br/>[SS : 3 x 50"]</li> </ul> | <ul style="list-style-type: none"> <li>• Belajar mandiri melalui Share ITS.</li> <li>• <i>Self learning through Share ITS</i></li> </ul> | • . | <b>5</b>  |

|        |                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                         |                                                                                                                                                                                                                                      |                                                                                                                                          |                                                                                                                                                      |   |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|        |                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• <i>Successfullness in explaining the assignment.</i></li> <li>• <i>Answer and analysis correctness</i></li> <li>• <i>Completeness and neatness of the report result</i></li> <li>• <i>On time submission of practicum report</i></li> <li>• <i>Correctness in explaining practicum project</i></li> </ul> |                                                                                                                                         |                                                                                                                                                                                                                                      |                                                                                                                                          |                                                                                                                                                      |   |
| 11 -12 | <p>Mahasiswa dapat menganalisis, melakukan merge dan query database kesehatan untuk menghasilkan informasi baru.</p> <p>Students can analyze, merge, and query health databases to generate new information.</p> | <ul style="list-style-type: none"> <li>• Ketepatan waktu pengumpulan tugas</li> <li>• Kebenaran melaksanakan tugas</li> <li>• Keberhasilan menjelaskan tugas</li> <li>• Kebenaran jawaban dan analisis</li> <li>• <i>On time submission of assignment</i></li> </ul>                                                                               | <p><b>Non-tes :</b><br/>Diskusi<br/>Tugas<br/>praktikum</p> <p><b>Non-test :</b><br/><i>Discussion<br/>Assignment<br/>practicum</i></p> | <ul style="list-style-type: none"> <li>• Kuliah dan diskusi<br/>[TM : 3 x 50"]<br/>[BM : 3 x 50"]<br/>[PT : 3 x 50"]</li> <li>• <i>Lecturing and discussion.</i><br/>[FF : 3 x 50"]<br/>[SA : 3 x 50"]<br/>[SS : 3 x 50"]</li> </ul> | <ul style="list-style-type: none"> <li>• Belajar mandiri melalui Share ITS.</li> <li>• <i>Self learning through Share ITS</i></li> </ul> | <ul style="list-style-type: none"> <li>• Pemodelan relationship dan primary key</li> <li>• <i>Relationship modelling and primary key.</i></li> </ul> | 5 |

|  |  |                                                                                                                                                                                                        |  |  |  |  |  |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
|  |  | <ul style="list-style-type: none"><li>• <i>Correctness of the assignment</i></li><li>• <i>Successfullness in explaining the assignment.</i></li><li>• <i>Answer and analysis correctness</i></li></ul> |  |  |  |  |  |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|

|       |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                     |                                                                                                                                                                                                                                      |                                                                                                                                          |                                                                                                                   |  |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--|
| 13-14 | <p>Mahasiswa dapat mengoptimisasi struktur data dan table yang mengeliminir duplikasi, entri data tak terpakai, dan ketidakjelasan data.</p> <p>Students can optimize data structures and tables that eliminate duplication, unused data entry, and data obscurity</p> | <ul style="list-style-type: none"> <li>• Ketepatan waktu pengumpulan tugas</li> <li>• Kebenaran melaksanakan tugas</li> <li>• Keberhasilan menjelaskan tugas</li> <li>• Kebenaran jawaban dan analisis</li> <li>• Kelengkapan dan kerapian hasil laporan</li> <li>• Ketepatan waktu pengumpulan laporan praktikum</li> <li>• Kebenaran menjelaskan proyek praktikum</li> <li>• <i>On time submission of assignment</i></li> </ul> | <p><b>Non-tes :</b><br/>Diskusi<br/>Tugas praktikum</p> <p><b>Non-test :</b><br/><i>Discussion<br/>Assignment<br/>practicum</i></p> | <ul style="list-style-type: none"> <li>• Kuliah dan diskusi<br/>[TM : 3 x 50"]<br/>[BM : 3 x 50"]<br/>[PT : 3 x 50"]</li> <li>• <i>Lecturing and discussion.</i><br/>[FF : 3 x 50"]<br/>[SA : 3 x 50"]<br/>[SS : 3 x 50"]</li> </ul> | <ul style="list-style-type: none"> <li>• Belajar mandiri melalui Share ITS.</li> <li>• <i>Self learning through Share ITS</i></li> </ul> | <ul style="list-style-type: none"> <li>• Normalisasi database</li> <li>• <i>Database normalization</i></li> </ul> |  |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--|

|       |                                                              |                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |    |
|-------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|----|
|       |                                                              | <ul style="list-style-type: none"> <li>• <i>Correctness of the assignment</i></li> <li>• <i>Successfullness in explaining the assignment.</i></li> <li>• <i>Answer and analysis correctness</i></li> <li>• <i>Completeness and neatness of the report result</i></li> <li>• <i>On time submission of practicum report</i></li> <li>• <i>Correctness in explaining practicum project</i></li> </ul> |  |  |  |  |    |
| 15-16 | <b>EVALUASI AKHIR SEMESTER</b><br><b>FINAL-SEMESTER EXAM</b> |                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  | 40 |

**TM**=Tatap Muka, **PT**=Penugasan Terstruktur, **BM**=Belajar Mandiri.

**FF** = Face to Face, **SA** = Structured Assignment, **SS** = Self Study.

## II. Rencana Asesmen & Evaluasi (RAE) / *Assessment & Evaluation Plan*

|                                                                                   |                                                                                                                                                                      |                                                                                                |                                                                     |                 |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------|
|  | <b>ASSESSMENT &amp; EVALUATION PLAN</b><br><b>BACHELOR DEGREE PROGRAM OF BIOMEDICAL ENGINEERING - FTEIC ITS</b><br><b>Course : Medical Database and Optimization</b> |                                                                                                |                                                                     | <b>RA&amp;E</b> |
|                                                                                   |                                                                                                                                                                      |                                                                                                |                                                                     | Write Doc Code  |
| Kode/code:<br><b>EB234911</b>                                                     | Bobot sks/credits (T/P): <b>3/0</b>                                                                                                                                  | Rumpun MK: <b>Ilmu Dasar Teknik</b><br>Course Cluster: <b>Basic Engineering</b>                | Smt: selection                                                      |                 |
| OTORISASI<br>AUTHORIZATION                                                        | Penyusun RA & E<br>Compiler A&EP<br><br><b>Nada Fitriyatul H, S.T, M.T</b>                                                                                           | Koordinator RMK<br>Course Cluster Coordinator<br><br><b>Muhammad Hilman Fatoni, S.T., M.T.</b> | Ka DEP<br>Head of DEP<br><br><b>Dr. Norma Hermawan, S.T., M.Sc.</b> |                 |

| Mge/<br>Week<br>(1) | Sub CP-MK /<br>Lesson<br>Learning<br>Outcomes (LLO)<br>(2)                                                                                                                           | Bentuk Asesmen<br>(Penilaian)<br>Form of Assessment<br>(3)                                  | Bobot /<br>Load (%)<br>(4)  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------|
| 1,2                 | <b>Sub CP-MK 1:</b><br>Mahasiswa mampu menggambarkan hubungan antar data klinis<br><br><b>LLO 1:</b><br><i>Students are able to describe the relationship between clinical data.</i> | <b>Non-tes :</b><br>Tugas 1 tahap 1<br><br><b>Non-test :</b><br><i>Assignment 1 stage 1</i> | Tugas<br>1/assignment 1 :5% |

|     |                                                                                                                                                                                                                                                                    |                                                                         |                          |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------|
| 3,4 | <p><b>Sub CP-MK 2:</b><br/>Mahasiswa dapat menggunakan catatan kesehatan elektronik untuk membuat bantuan keputusan klinis (mis. Membandingkan berbagai teknik pengobatan).</p> <p><b>LLO 2:</b><br/><i>Students can use electronic health records to make</i></p> | <p><b>Non-tes : Tugas 2:</b></p> <p><b>Non-test : Assignment 2:</b></p> | Tugas 2/assignment 2: 5% |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------|

|   |                                                                                                                                                                                                                                                                                                              |                                                                                                                |                                                                      |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
|   | <i>clinical decision aids (eg comparing different treatment techniques).</i>                                                                                                                                                                                                                                 |                                                                                                                |                                                                      |
| 5 | <p><b>Sub CP-MK 3:</b><br/>Mahasiswa mampu mendesain database kesehatan (pendaftaran pasien, repository kesalahan pengobatan kesehatan, dll.)</p> <p><b>LLO 3:</b><br/><i>Students are able to design medical database (patient registration, repository of error medication, medical history, etc).</i></p> | <p><b>Non-tes :</b><br/>Tugas 3: presentasi</p> <p><b>Non-test :</b><br/><i>Assignment 3 Presentation.</i></p> | <p>Tugas 1/assignment 2 :5%</p> <p>Presentasi/ Presentation: 10%</p> |

|      |                                                                                                                                                                                                                                                                              |                                                                   |                          |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------|
| 6,7  | <b>Sub CP-MK 4:</b><br>Mahasiswa dapat melakukan Import, export, and menghubungkan table data lintas platform.<br><br><b>LLO 4:</b><br><i>Students are able to calculate interval estimates from averages and proportions of a population from one or two sample groups.</i> | <b>Non-tes :</b><br>Tugas 4<br><br><b>Non-test : Assignment 4</b> | Tugas 1/assignment 4 :5% |
| 8    | ETS                                                                                                                                                                                                                                                                          | tes                                                               | 15%                      |
| 9,10 | <b>Sub CP-MK 5:</b><br>Mahasiswa dapat membuat queries dan reports untuk                                                                                                                                                                                                     | <b>Non-tes : Tugas 5:</b>                                         | Tugas 5/assignment 5 :5% |

|  |                                                                                                                                                                                                                              |                                |              |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------|
|  | menggambarkan hubungan rumit diantara field (variable) di database kesehatan.<br><br><b>LLO 5:</b><br><i>Students are able to design and perform hypothesis tests for a population based on the number of sample groups.</i> | <b>Non-test : Assignment 5</b> | Project:10 % |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------|

|       |                                                                                                                                                                                                                                                                                 |                                                                                                                  |                                          |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 11,12 | <p><b>Sub CP-MK 6:</b><br/>Mahasiswa dapat menganalisis, melakukan merge, dan query database kesehatan untuk menghasilkan informasi baru</p> <p><b>LLO 6:</b><br/><i>Students are able to determine the relationship between two or more variables.</i></p>                     | <p><b>Non Tes:</b><br/>Tugas 6</p> <p><b>Non Test:</b><br/><i>Assignment 6</i></p>                               | Tugas 6/assignment 6 :5%                 |
| 13,14 | <p><b>Sub CP-MK 7</b><br/>Mahasiswa dapat mengoptimisasi struktur data dan table yang mengeliminir duplikasi, entri data tak terpakai, dan ketidakjelasan data.</p> <p><b>LLO 7</b><br/>Students can optimize data structures and tables that eliminate duplication, unused</p> | <p><b>Non Tes:</b><br/>Tugas 7</p> <p>Projek 2</p> <p><b>Non Test:</b><br/><i>Assignment 7<br/>Project 2</i></p> | Tugas 7/assignment 7 :5%<br>Project:15 % |

|                                                        |                                |     |             |
|--------------------------------------------------------|--------------------------------|-----|-------------|
|                                                        | data entry, and data obscurity |     |             |
| 15                                                     | EAS                            | tes | 15%         |
| <b>Total bobot penilaian<br/>Total assessment load</b> |                                |     | <b>100%</b> |

- Indikator Pencapaian CPL Pada MK / *Indicator of PLO achievement charged to the course*

| CPL yang dibebankan<br>pada MK / <i>PLO charged to<br/>the course</i> | CPMK /<br><i>Course Learning Outcome<br/>(CLO)</i> | Minggu ke /<br><i>Week</i> | Bentuk Asesmen /<br><i>Form of Assessment</i> | Bobot /<br><i>Load (%)</i> |
|-----------------------------------------------------------------------|----------------------------------------------------|----------------------------|-----------------------------------------------|----------------------------|
| CPL-02 / PLO-02                                                       | CPMK 2 / CLO 2                                     | Week- 1-4                  | Written Assignment 1                          | 3                          |
|                                                                       |                                                    | Week- 5                    | Project Assignment 1                          | 5                          |
|                                                                       |                                                    | Week- 8                    | Mid Term Exam                                 | 7                          |
|                                                                       | CPMK 3 / CLO 3                                     | Week- 5                    | Project Assignment 1                          | 3                          |
|                                                                       |                                                    | Week- 6-7                  | Written Assignment 2                          | 2                          |
|                                                                       |                                                    | Week- 8                    | Mid Term Exam                                 | 10                         |
|                                                                       | CPMK 5 / CLO 5                                     | Week- 9-10                 | Written Assignment 3                          | 5                          |
|                                                                       |                                                    | Week- 13-14                | Project Assignment 2                          | 3                          |
|                                                                       |                                                    | Week- 15-16                | Final Term Exam                               | 7                          |
| CPL-05 / PLO-05                                                       | CPMK 1 / CLO 1                                     | Week- 1-4                  | Written Assignment 1                          | 2                          |
|                                                                       |                                                    | Week- 5                    | Project Assignment 1                          | 5                          |
|                                                                       |                                                    | Week- 8                    | Mid Term Exam                                 | 8                          |
| CPL-6 / PLO-06                                                        | CPMK 4 / CLO 4                                     | Week- 5                    | Project Assignment 1                          | 2                          |
|                                                                       |                                                    | Week- 6-7                  | Written Assignment 2                          | 3                          |
|                                                                       |                                                    | Week- 8                    | Mid Term Exam                                 | 5                          |
|                                                                       |                                                    | Week- 15-16                | Final Term Exam                               | 5                          |
|                                                                       | CPMK 6 / CLO 6                                     | Week- 11-12                | Written Assignment 4                          | 3                          |
|                                                                       |                                                    | Week- 13-14                | Project Assignment 2                          | 2                          |
|                                                                       |                                                    | Week- 15-16                | Final Term Exam                               | 10                         |
| CPL-10 / PLO-10                                                       | CPMK 7 / CLO 7                                     | Week- 11-12                | Written Assignment 4                          | 2                          |
|                                                                       |                                                    | Week- 15-16                | Final Term Exam                               | 8                          |
|                                                                       |                                                    |                            |                                               | $\Sigma = 100\%$           |

| No | Form of<br>Assessment | PLO-01 | PLO-02 | PLO-03 | PLO-04 | PLO-05 | PLO-06 | PLO-07 | PLO-08 | PLO-09 | PLO-10 | PLO-11 | PLO-12 | Total |
|----|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
|----|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|

|   |                                                                               |  |      |  |  |      |      |  |  |  |      |  |  |            |
|---|-------------------------------------------------------------------------------|--|------|--|--|------|------|--|--|--|------|--|--|------------|
| 1 | Tugas 1<br>(2 Tugas Tertulis)<br><br><i>Task 1<br/>(2 Written Assignment)</i> |  | 0.05 |  |  | 0.02 | 0.03 |  |  |  |      |  |  | <b>0.1</b> |
| 2 | Tugas 2<br>(2 Tugas Tertulis)<br><br><i>Task 2<br/>(2 Written Assignment)</i> |  | 0.05 |  |  |      | 0.03 |  |  |  | 0.02 |  |  | <b>0.1</b> |
| 3 | Tugas Project<br>(2 Tugas Proyek)<br><br><i>(2 Project Assignment)</i>        |  | 0.11 |  |  | 0.05 | 0.04 |  |  |  |      |  |  | <b>0.2</b> |
| 4 | Evaluasi Tengah Semester<br><br><i>Mid Term Exam</i>                          |  | 0.17 |  |  | 0.08 | 0.05 |  |  |  |      |  |  | <b>0.3</b> |
| 5 | Evaluasi Akhir Semester<br><br><i>Final Term Exam</i>                         |  | 0.07 |  |  |      | 0.15 |  |  |  | 0.08 |  |  | <b>0.3</b> |
|   | <i>Total</i>                                                                  |  | 0.45 |  |  | 0.15 | 0.3  |  |  |  | 0.1  |  |  | <b>1</b>   |



