

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                         |           |                                         |             |                           |              |                 |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------|-------------|---------------------------|--------------|-----------------|
|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Universitas Negeri Surabaya<br>S2 Informatika                                                                                                                                                                                                           |           |                                         |             |                           | Kode Dokumen |                 |
| RENCANA PEMBELAJARAN SEMESTER                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                         |           |                                         |             |                           |              |                 |
| MATA KULIAH (MK)                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | KODE                                                                                                                                                                                                                                                    | Rumpun MK |                                         | BOBOT (sks) |                           | SEMESTER     | Tgl Penyusunan  |
| Virtualisasi dan Komputasi Awan                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5510003024                                                                                                                                                                                                                                              |           |                                         | 3           |                           |              | 25 Agustus 2026 |
| OTORISASI                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Pengembang RPS                                                                                                                                                                                                                                          |           | Koordinator RMK                         |             | Koordinator Program Studi |              |                 |
|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                         |           | Dr. Ir. Ricky Eka Putra, S.Kom., M.Kom. |             | RICKY EKA PUTRA           |              |                 |
| Deskripsi Singkat MK                                                              | Matakuliah Virtualisasi dan Komputasi Awan pada jenjang S2 program studi Informatika bertujuan untuk memberikan pemahaman komprehensif mengenai prinsip, arsitektur, teknologi, dan implementasi virtualisasi serta komputasi awan (cloud computing). Mahasiswa akan mempelajari konsep dasar virtualisasi perangkat keras dan perangkat lunak, model layanan cloud (IaaS, PaaS, SaaS), serta teknologi kontainer dan orkestrasi modern seperti Docker dan Kubernetes. Ruang lingkup juga mencakup manajemen sumber daya komputasi awan, aspek keamanan dan privasi data di cloud, serta studi kasus penerapan cloud dalam skala industri dan pemerintahan. Mata kuliah ini mendukung pengembangan kompetensi dalam membangun, mengelola, dan mengoptimalkan solusi berbasis awan yang efisien, aman, dan berkelanjutan untuk berbagai kebutuhan di bidang informatika. |                                                                                                                                                                                                                                                         |           |                                         |             |                           |              |                 |
| Capaian Pembelajaran (CP)                                                         | CPL-PRODI yang dibebankan pada MK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                         |           |                                         |             |                           |              |                 |
|                                                                                   | CPL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mampu mengaplikasikan keahlian lanjut dalam bidang Informatika, khususnya Sains Data dan Kecerdasan Artifisial, Jaringan Cerdas dan Multimedia, serta Rekayasa Sistem Informatika, sesuai dengan kebutuhan riset, industri, pendidikan, dan masyarakat. |           |                                         |             |                           |              |                 |
|                                                                                   | CPL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mampu menganalisis kebutuhan, memformulasikan masalah, dan merancang alternatif solusi terhadap permasalahan kompleks di bidang Informatika dengan menggunakan metode analitis, komputasional, dan berbasis data.                                       |           |                                         |             |                           |              |                 |
|                                                                                   | CPL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mampu mengevaluasi kinerja sistem, teknologi, atau solusi informatika berdasarkan data, metrik, eksperimen, dan kebutuhan pengguna/organisasi untuk menghasilkan perbaikan berkelanjutan.                                                               |           |                                         |             |                           |              |                 |
|                                                                                   | CPL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mampu mengembangkan solusi informatika yang inovatif, efektif, efisien, aman, adaptif, dan berkelanjutan untuk meningkatkan kinerja organisasi, industri, pendidikan, atau masyarakat.                                                                  |           |                                         |             |                           |              |                 |
|                                                                                   | Capaian Pembelajaran Mata Kuliah (CPMK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                         |           |                                         |             |                           |              |                 |
|                                                                                   | CPMK-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Mahasiswa mampu menjelaskan prinsip-prinsip dasar virtualisasi dan komputasi awan serta berbagai model layanan cloud computing.                                                                                                                         |           |                                         |             |                           |              |                 |
|                                                                                   | CPMK-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Mahasiswa mampu menganalisis kebutuhan sistem untuk merancang arsitektur solusi berbasis virtualisasi dan komputasi awan yang sesuai.                                                                                                                   |           |                                         |             |                           |              |                 |
|                                                                                   | CPMK-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Mahasiswa mampu mengevaluasi performa, efisiensi, dan keamanan infrastruktur cloud dengan pendekatan berbasis data dan rekomendasi teknis.                                                                                                              |           |                                         |             |                           |              |                 |
|                                                                                   | CPMK-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Mahasiswa mampu mengembangkan solusi inovatif berbasis teknologi virtualisasi dan komputasi awan untuk meningkatkan efisiensi organisasi atau sistem.                                                                                                   |           |                                         |             |                           |              |                 |
| Matrik CPL - CPMK                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                         |           |                                         |             |                           |              |                 |

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|------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------------------------------------------------|-----------------|---------------------|-----|---------------------|-----|----|----|----|-----|----|----|----|--|------|-----------|--|--|--|-----|--|--|--|-----|--|--|--|-----|--|--|--|--------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--------|--------|---|---|--|--|---|--|--|--|--|--|--|--|--|--|--|--------|--------|--|--|---|---|---|--|--|--|---|--|--|--|--|--|--|--------|--------|--|--|--|--|--|---|---|---|---|--|--|--|---|--|--|--------|--|--|--|--|--|--|--|--|--|--|---|---|---|---|---|---|
|                                                                  |                                                                              | <table><tr><td>CPMK</td><td colspan="4">CPL</td><td colspan="4">CPL</td><td colspan="4">CPL</td><td colspan="4">CPL</td></tr><tr><td>CPMK-1</td><td colspan="4">✓</td><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td></tr><tr><td>CPMK-2</td><td colspan="4"></td><td colspan="4">✓</td><td colspan="4"></td><td colspan="4"></td></tr><tr><td>CPMK-3</td><td colspan="4"></td><td colspan="4"></td><td colspan="4">✓</td><td colspan="4"></td></tr><tr><td>CPMK-4</td><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td><td colspan="4">✓</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                        |                              |                                                                                  |                 |                     |     |                     |     |    |    |    |     |    |    |    |  | CPMK | CPL       |  |  |  | CPL |  |  |  | CPL |  |  |  | CPL |  |  |  | CPMK-1 | ✓ |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        | CPMK-2 |   |   |  |  | ✓ |  |  |  |  |  |  |  |  |  |  |        | CPMK-3 |  |  |   |   |   |  |  |  | ✓ |  |  |  |  |  |  |        | CPMK-4 |  |  |  |  |  |   |   |   |   |  |  |  | ✓ |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK                                                             | CPL                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  | CPL             |                     |     |                     | CPL |    |    |    | CPL |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK-1                                                           | ✓                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  |                 |                     |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK-2                                                           |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  | ✓               |                     |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK-3                                                           |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  |                 |                     |     |                     | ✓   |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK-4                                                           |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  |                 |                     |     |                     |     |    |    |    | ✓   |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| Matrik CPMK pada Kemampuan akhir tiap tahapan belajar (Sub-CPMK) |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  |                 |                     |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
|                                                                  |                                                                              | <table><tr><td rowspan="2">CPMK</td><td colspan="16">Minggu Ke</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr><tr><td>CPMK-1</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CPMK-2</td><td></td><td></td><td></td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CPMK-3</td><td></td><td></td><td></td><td></td><td></td><td></td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CPMK-4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr></table> |                              |                                                                                  |                 |                     |     |                     |     |    |    |    |     |    |    |    |  | CPMK | Minggu Ke |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  | 1      | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | CPMK-1 | ✓      | ✓ | ✓ |  |  |   |  |  |  |  |  |  |  |  |  |  | CPMK-2 |        |  |  | ✓ | ✓ | ✓ |  |  |  |   |  |  |  |  |  |  | CPMK-3 |        |  |  |  |  |  | ✓ | ✓ | ✓ | ✓ |  |  |  |   |  |  | CPMK-4 |  |  |  |  |  |  |  |  |  |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| CPMK                                                             | Minggu Ke                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  |                 |                     |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
|                                                                  | 1                                                                            | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3                            | 4                                                                                | 5               | 6                   | 7   | 8                   | 9   | 10 | 11 | 12 | 13  | 14 | 15 | 16 |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK-1                                                           | ✓                                                                            | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ✓                            |                                                                                  |                 |                     |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK-2                                                           |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              | ✓                                                                                | ✓               | ✓                   |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK-3                                                           |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  |                 |                     | ✓   | ✓                   | ✓   | ✓  |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| CPMK-4                                                           |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                                                                                  |                 |                     |     |                     |     |    | ✓  | ✓  | ✓   | ✓  | ✓  | ✓  |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| Pustaka                                                          |                                                                              | Utama :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                                                                                  |                 |                     |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
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|                                                                  |                                                                              | Pendukung :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |                                                                                  |                 |                     |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
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| Mg Ke-                                                           | Kemampuan akhir tiap tahapan belajar (Sub-CPMK)                              | Penilaian                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              | Bentuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [ Estimasi Waktu] |                 | Materi Pembelajaran |     | Bobot Penilaian (%) |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
|                                                                  |                                                                              | Indikator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Kriteria & Bentuk            | Luring (offline)                                                                 | Daring (online) |                     |     |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| (1)                                                              | (2)                                                                          | (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (4)                          | (5)                                                                              | (6)             | (7)                 | (8) |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| 1                                                                | Menjelaskan konsep dasar virtualisasi dan sejarah komputasi awan             | Partisipasi & kejelasan pemahaman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Ketepatan konsep             | Ceramah dan Diskusi                                                              |                 |                     | 5%  |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| 2                                                                | Mengidentifikasi model layanan cloud (IaaS, PaaS, SaaS)                      | Ketepatan klasifikasi model layanan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Analisis kasus yang benar    | Ceramah dan Studi Kasus                                                          |                 |                     | 5%  |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| 3                                                                | Menjelaskan arsitektur cloud dan virtualisasi                                | Kejelasan struktur arsitektur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Visualisasi arsitektur tepat | Ceramah dan Diskusi                                                              |                 |                     | 5%  |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| 4                                                                | Menganalisis kebutuhan organisasi terhadap layanan cloud                     | Analisis kebutuhan sistem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Relevansi terhadap solusi    | Simulasi Kebutuhan dan Studi Kasus                                               |                 |                     | 5%  |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| 5                                                                | Mendesain arsitektur solusi berbasis cloud                                   | Ketepatan desain                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Arsitektur sesuai kebutuhan  | Diskusi Desain dan Simulasi                                                      |                 |                     | 5%  |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| 6                                                                | Menentukan platform cloud (AWS, Azure, GCP) yang sesuai                      | Ketepatan pemilihan platform                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Relevansi kebutuhan vs fitur | Diskusi Kelompok dan Demo Video Platform                                         |                 |                     | 5%  |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| 7                                                                | Menganalisis performa layanan cloud                                          | Ketepatan analisis data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Ketelitian dan interpretasi  | Simulasi dan diskusi                                                             |                 |                     | 5%  |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |
| 8                                                                | Mampu menjelaskan dengan lebih baik materi-materi dari minggu ke-1 s.d. ke-7 | 1. Menerapkan konsep yang telah dipelajari<br>2. Mengalisis dan memecahkan masalah<br>3. Menjawab soal esai dan studi kasus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Kedalaman jawaban            | Menyelesaikan soal ujian Sub-Sumatif                                             |                 |                     | 15% |                     |     |    |    |    |     |    |    |    |  |      |           |  |  |  |     |  |  |  |     |  |  |  |     |  |  |  |        |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |        |   |   |  |  |   |  |  |  |  |  |  |  |  |  |  |        |        |  |  |   |   |   |  |  |  |   |  |  |  |  |  |  |        |        |  |  |  |  |  |   |   |   |   |  |  |  |   |  |  |        |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |

|    |                                                                               |                                                                                                         |                                                 |                                         |  |  |     |
|----|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------|--|--|-----|
| 9  | Mengevaluasi efisiensi biaya dan sumber daya cloud                            | Evaluasi tepat sasaran                                                                                  | Analisis mendalam                               | Studi Kasus dan analisis                |  |  | 5%  |
| 10 | Mengevaluasi keamanan dan risiko dalam cloud                                  | Identifikasi risiko tepat                                                                               | Analisis mitigasi                               | Simulasi Risiko                         |  |  | 5%  |
| 11 | Mendesain solusi inovatif berbasis cloud computing                            | Inovasi solusi                                                                                          | Originalitas dan efisiensi                      | Proyek Tim dan Tools Kolaboratif Daring |  |  | 5%  |
| 12 | Menerapkan solusi inovatif berbasis cloud                                     | Implementasi berhasil                                                                                   | Kesesuaian solusi                               | Implementasi Mini-Project               |  |  | 5%  |
| 13 | Menyusun laporan teknis dan dokumentasi solusi cloud                          | Kelengkapan laporan                                                                                     | Sistematika dan kualitas isi                    | Pendampingan Laporan                    |  |  | 5%  |
| 14 | Mempresentasikan solusi cloud secara profesional                              | Kemampuan presentasi                                                                                    | Visualisasi & komunikasi                        | Presentasi Kelompok                     |  |  | 5%  |
| 15 | Meninjau dan mengevaluasi solusi rekan (peer review)                          | Kualitas evaluasi                                                                                       | Ketajaman umpan balik                           | Review antar Kelompok                   |  |  | 5%  |
| 16 | Mampu menjelaskan dengan lebih baik materi-materi dari minggu ke-9 s.d. ke-15 | Mengintegrasikan seluruh materi Virtualisasi dan Komputasi Awan yang telah dipelajari dalam mata kuliah | Kemampuan menyelesaikan soal terkait semua CPMK | Menyelesaikan soal Ujian Sumatif        |  |  | 15% |

#### SDGS (Sustainable Development Goals)



#### Catatan

- Capaian Pembelajaran Lulusan Program Studi (CPL-Prodi)** adalah rumusan kemampuan yang harus dimiliki oleh lulusan program studi yang mencakup sikap, penguasaan pengetahuan, keterampilan umum, dan keterampilan khusus sesuai dengan jenjang kualifikasi, yang diperoleh melalui proses pembelajaran.
- CPL-Prodi yang dibebankan pada Mata Kuliah** adalah bagian dari CPL-Prodi yang dipilih dan relevan untuk dikembangkan melalui suatu mata kuliah, sebagai dasar perumusan capaian pembelajaran mata kuliah.
- Capaian Pembelajaran Mata Kuliah (CPMK)** adalah kemampuan yang dirumuskan secara spesifik dan diturunkan dari CPL-Prodi yang dibebankan pada mata kuliah, serta menggambarkan kompetensi yang harus dicapai mahasiswa setelah menyelesaikan mata kuliah.
- Sub-CPMK** adalah kemampuan akhir yang direncanakan pada setiap tahap pembelajaran, sebagai penjabaran lebih rinci dari CPMK, bersifat terukur dan dapat diamati sesuai dengan materi pembelajaran.
- Indikator Penilaian** adalah pernyataan spesifik dan terukur yang digunakan untuk menilai ketercapaian Sub-CPMK, baik dari proses maupun hasil belajar mahasiswa, yang didukung dengan bukti penilaian.
- Kriteria Penilaian** adalah tolok ukur yang digunakan untuk menentukan tingkat ketercapaian hasil belajar mahasiswa berdasarkan indikator penilaian, guna menjamin penilaian yang objektif, konsisten, dan adil. Kriteria penilaian dapat bersifat kuantitatif dan/atau kualitatif.
- Bentuk Penilaian** meliputi penilaian tes dan non-tes sesuai dengan karakteristik capaian pembelajaran.
- Bentuk Pembelajaran** meliputi kuliah, responsi, tutorial, seminar atau bentuk lain yang setara, praktikum, praktik studio, praktik bengkel, praktik lapangan, penelitian, dan pengabdian kepada masyarakat.
- Metode Pembelajaran** merupakan cara penyampaian pembelajaran yang digunakan untuk mencapai capaian pembelajaran, antara lain Small Group Discussion, Project Based Learning, Case Based Learning, Collaborative Learning, Discovery Learning, Self-Directed Learning, serta metode lain yang relevan.
- Materi Pembelajaran** adalah bahan kajian yang disusun secara sistematis dalam bentuk pokok dan sub-pokok bahasan untuk mendukung pencapaian Sub-CPMK.
- Bobot Penilaian** adalah persentase kontribusi setiap komponen penilaian terhadap nilai akhir mata kuliah, yang ditetapkan secara proporsional sesuai tingkat kompleksitas dan ketercapaian Sub-CPMK, dengan total keseluruhan sebesar 100%.
- TM = Tatap Muka, PT = Penugasan Terstruktur, BM = Belajar Mandiri.