

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                            |           |                                         |  |                           |                 |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------|--|---------------------------|-----------------|
|  | Universitas Negeri Surabaya<br>S2 Pendidikan Sains                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                            |           |                                         |  |                           | Kode Dokumen    |
| RENCANA PEMBELAJARAN SEMESTER                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                            |           |                                         |  |                           |                 |
| MATA KULIAH (MK)                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | KODE                                                                                                                                                                                                                                                                                                                                                                       | Rumpun MK | BOBOT (sks)                             |  | SEMESTER                  | Tgl Penyusunan  |
| Pendidikan STEAM                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 8410102225                                                                                                                                                                                                                                                                                                                                                                 |           | 2                                       |  |                           | 25 Agustus 2026 |
| OTORISASI                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Pengembang RPS                                                                                                                                                                                                                                                                                                                                                             |           | Koordinator RMK                         |  | Koordinator Program Studi |                 |
|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                            |           | Prof. Nadi Suprpto, S.Pd., M.Pd., Ph.D. |  | EKO HARIYONO              |                 |
| Deskripsi Singkat MK                                                              | Mata kuliah ini fokus pada pemahaman dan pengetahuan peserta didik mengenai science, technology, engineering, art, dan mathematics dapat meningkat, sehingga pemahaman tersebut dapat digunakan untuk menyelesaikan permasalahan dan membuat suatu keputusan untuk kemajuan manusia. Mata kuliah ini menggunakan dua pendekatan, berbasis proyek dan berbasis masalah dengan penekanan Project Based Learning. Di pertengahan semester awal, mahasiswa diminta untuk mengidentifikasi permasalahan di masyarakat secara kritis, mencari dan menawarkan solusi atas permasalahan tersebut dengan mengintegrasikan komponen pengetahuan STEAM dalam konteks pembelajaran. Di tengah semester terakhir, pola pengintegrasian yang telah mereka alami akan mereka gunakan untuk merancang desain aktivitas STEAM yang sederhana untuk peserta didik. |                                                                                                                                                                                                                                                                                                                                                                            |           |                                         |  |                           |                 |
| Capaian Pembelajaran (CP)                                                         | CPL-PRODI yang dibebankan pada MK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                            |           |                                         |  |                           |                 |
|                                                                                   | CPL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Menguasai teori pedagogi, andragogi, hutagogi, dan dalam pengembangan bidang pendidikan IPA berdasarkan isu terkini dan mampu mengemas pembelajaran IPA melalui kerangka TPACK (Technology, Pedagogy, and Content Knowledge) yang diimplementasikan dalam metode penelitian melalui pendekatan multi dan interdisipliner, dan mempublikasikannya pada jurnal yang relevan. |           |                                         |  |                           |                 |
|                                                                                   | CPL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mengembangkan diri secara berkelanjutan dan berkolaborasi.                                                                                                                                                                                                                                                                                                                 |           |                                         |  |                           |                 |
|                                                                                   | CPL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Merancang dan mengevaluasi kurikulum pendidikan IPA untuk mengembangkan inovasi pembelajaran yang lebih efektif.                                                                                                                                                                                                                                                           |           |                                         |  |                           |                 |
|                                                                                   | CPL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Merancang dan mengembangkan perangkat pembelajaran yang inovatif untuk memecahkan masalah pembelajaran dan meningkatkan kualitas pembelajaran IPA secara berkelanjutan dalam mewujudkan Sustainable Development Goals (SDGs).                                                                                                                                              |           |                                         |  |                           |                 |
|                                                                                   | Capaian Pembelajaran Mata Kuliah (CPMK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                            |           |                                         |  |                           |                 |
|                                                                                   | CPMK-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 1. Mendesripsikan karakteristik proyek-proyek berbasis STEAM.                                                                                                                                                                                                                                                                                                         |           |                                         |  |                           |                 |
|                                                                                   | CPMK-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 3. Merancang (merencanakan dan menyusun jadwal) proyek STEAM.                                                                                                                                                                                                                                                                                                         |           |                                         |  |                           |                 |
|                                                                                   | CPMK-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 11. Mengomunikasikan secara oral/lisan untuk hasil implementasi proyek STEAM yang dikembangkan.                                                                                                                                                                                                                                                                       |           |                                         |  |                           |                 |
|                                                                                   | CPMK-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 14. Memfinalisasikan draf tulisan Ilmiah dari hasil implementasi proyek STEAM yang dikembangkan.                                                                                                                                                                                                                                                                      |           |                                         |  |                           |                 |
|                                                                                   | CPMK-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 4. Mengembangkan instrumen terkait proyek STEAM.                                                                                                                                                                                                                                                                                                                      |           |                                         |  |                           |                 |
|                                                                                   | CPMK-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 5. Mengembangkan desain (material) pembelajaran di berbasis STEAM.                                                                                                                                                                                                                                                                                                    |           |                                         |  |                           |                 |
|                                                                                   | CPMK-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 12. Mendesain manuskrip/artikel dari hasil implementasi proyek STEAM yang dikembangkan.                                                                                                                                                                                                                                                                               |           |                                         |  |                           |                 |
|                                                                                   | CPMK-8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 13. Mengevaluasi draf tulisan Ilmiah dari hasil implementasi proyek STEAM yang dikembangkan.                                                                                                                                                                                                                                                                          |           |                                         |  |                           |                 |
|                                                                                   | CPMK-9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CPMK 7. Mendesain draf perlindungan hukum (hak cipta) terkait instrumen dan/atau material pembelajaran di berbasis STEAM                                                                                                                                                                                                                                                   |           |                                         |  |                           |                 |

|                |                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------|
| <b>CPMK-10</b> | CPMK 9. Mengimplementasi proyek STEAM dalam pembelaran skala mikro (kelas terbatas)                            |
| <b>CPMK-11</b> | CPMK 6. Mengevaluasi desain pembelajaran di berbasis STEAM.                                                    |
| <b>CPMK-12</b> | CPMK 2. Menemukanali permasalahan di masyarakat terkait proyek-proyek berbasis STEAM.                          |
| <b>CPMK-13</b> | CPMK 10. Menganalisis data hasil implementasi proyek STEAM yang dikembangkan.                                  |
| <b>CPMK-14</b> | CPMK 15. Mendeseminasikan (submit) draf tulisan Ilmiah dari hasil implementasi proyek STEAM yang dikembangkan. |
| <b>CPMK-15</b> | CPMK 16. Merefleksikan dan mendesain tindak lanjut pembelajaran STEAM.                                         |
| <b>CPMK-16</b> | CPMK 8. Mendesain material pembelajaran dan instrumen penelitian terkait proyek STEAM yang dikembangkan        |

**Matrik CPL - CPMK**

| CPMK    | CPL | CPL | CPL | CPL |
|---------|-----|-----|-----|-----|
| CPMK-1  | ✓   |     |     |     |
| CPMK-2  | ✓   |     |     |     |
| CPMK-3  | ✓   |     |     |     |
| CPMK-4  | ✓   |     |     |     |
| CPMK-5  | ✓   |     |     |     |
| CPMK-6  | ✓   |     |     |     |
| CPMK-7  | ✓   |     |     |     |
| CPMK-8  | ✓   |     |     |     |
| CPMK-9  |     | ✓   |     |     |
| CPMK-10 |     |     | ✓   |     |
| CPMK-11 |     |     | ✓   |     |
| CPMK-12 |     |     | ✓   |     |
| CPMK-13 |     |     | ✓   |     |
| CPMK-14 |     |     | ✓   |     |
| CPMK-15 |     |     |     | ✓   |
| CPMK-16 |     |     |     | ✓   |

**Matrik CPMK pada Kemampuan akhir tiap tahapan belajar (Sub-CPMK)**

|         |                                                 | <table><tr><th rowspan="2">CPMK</th><th colspan="16">Minggu Ke</th></tr><tr><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th></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><tr><td>CPMK-5</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-6</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-7</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-8</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-9</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-10</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-11</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-12</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-13</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-14</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-15</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-16</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-5 |  |  |  | ✓ |  |  |  |  |  |  |  |  |  |  |  |  | CPMK-6 |  |  |  |  | ✓ |  |  |  |  |  |  |  |  |  |  |  | CPMK-7 |  |  |  |  |  |  |  |  |  |  |  | ✓ |  |  |  |  | CPMK-8 |  |  |  |  |  |  |  |  |  |  |  |  | ✓ |  |  |  | CPMK-9 |  |  |  |  |  |  |  | ✓ |  |  |  |  |  |  |  |  | CPMK-10 |  |  |  |  |  |  |  |  | ✓ |  |  |  |  |  |  |  | CPMK-11 |  |  |  |  |  | ✓ |  |  |  |  |  |  |  |  |  |  | CPMK-12 |  | ✓ |  |  |  |  |  |  |  |  |  |  |  |  |  |  | CPMK-13 |  |  |  |  |  |  |  |  |  | ✓ |  |  |  |  |  |  | CPMK-14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | ✓ |  | CPMK-15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | ✓ | CPMK-16 |  |  |  |  |  |  |  | ✓ |  |  |  |  |  |  |  |  |
|---------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------|---------------------|---------------------|---|---|----|----|----|----|----|----|----|--|--|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--------|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--------|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--------|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--------|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--------|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--------|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--------|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--------|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|---------|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|---------|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|---------|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---------|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|
| 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-5  |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ✓                                                                                |                 |                     |                     |   |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-6  |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  | ✓               |                     |                     |   |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-7  |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     |   |   |    |    | ✓  |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-8  |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     |   |   |    |    |    | ✓  |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-9  |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     | ✓ |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-10 |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     |   | ✓ |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-11 |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 | ✓                   |                     |   |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-12 |                                                 | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     |   |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-13 |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     |   |   | ✓  |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-14 |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     |   |   |    |    |    |    |    | ✓  |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-15 |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     |   |   |    |    |    |    |    |    | ✓  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| CPMK-16 |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     | ✓ |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| Pustaka | Utama :                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <div>1. 1. Armstrong, L. (2019). STEAM Projects: Observation, Experimentation, &amp; Presentation. New York: Mark Twain Media, Inc.</div> <div>2. Burke, L. (2018). The STEAM Team Simple Science Explained. New York: DK Publishing.</div> <div>3. Kao, V., Kiernan, J. E. (Eds). (2022). Writing STEAM: Composition, STEM, and a New Humanities. New York: Routledge</div> <div>4. Khine, M. S., Areepattamannil, S. (Eds). (2019). STEAM Education: Theory and Practice. Cham: Springer Nature.</div> <div>5. Sousa, D. A., &amp; Pilecki, T. (2018). From STEM to STEAM: Brain-Compatible Strategies and Lessons That Integrate the Arts. London: Corwin.</div> <div>6. Voigt, D. C. S. (2023). STEAM Teaching and Learning Through the Arts and Design: A Practical Guide for PK–12 Educators. New York: Routledge.</div> <div>7. Wilhite, Z. B. (eds). (2019). Promoting Language and STEAM as Human Rights in Education: Science, Technology, Engineering, Arts and Mathematics. New York: Springer.</div> <div>8. Hawin, M., Rsiswandi, BA., (2020) Isu-isu penting hak kekayaan intelektual di Indonesia. UGM Press, 2020.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                  |                 |                     |                     |   |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
|         | Pendukung :                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <div>1. 1. Aguilera, D., &amp; Revilla, J. O. (2021). STEM vs. STEAM Education and Student Creativity: A Systematic Literature Review. Education Science 11(331), 1-13. doi:10.3390/educsci11070331</div> <div>2. Arce, E., Suárez-García, A., López-Vázquez, J. A., &amp; Fernández-Ibáñez, M. I. (2022). Design Sprint: Enhancing STEAM and engineering education through agile prototyping and testing ideas. Thinking Skills and Creativity, 44. doi:10.1016/j.tsc.2022.101039</div> <div>3. Herro, D., Quigley, C., &amp; Cian, H. (2018). The Challenges of STEAM Instruction: Lessons from the Field. Action in Teacher Education, 41(2), 172-190. doi:10.1080/01626620.2018.1551159</div> <div>4. Holmes, K. P., Moore, J. J., &amp; Holmes, S. V. (2023). A Sensory Approach to STEAM Teaching and Learning: Materials-Based Units for Students K-6. London: Routledge.</div> <div>5. Lestari, D., Ibrahim, N., &amp; Iriani, C. (2023). STEAM: Science, Technology, Engineering, Art, and Mathematics on History Learning in the 21st Century. Journal of Education Research and Evaluation, 7(2), 306-312. doi:10.23887/jere.v7i2.44172</div> <div>6. Lu, S.-Y., Wu, C.-L., &amp; Huang, Y.-M. (2022). Evaluation of Disabled STEAM -Students' Education Learning Outcomes and Creativity under the UN Sustainable Development Goal: Project-Based Learning Oriented STEAM Curriculum with Micro:bit. Sustainability, 14(2), 1-12. doi:10.3390/su14020679</div> <div>7. Mitchell, D., &amp; Forestieri, M. (2018). Simple STEAM 50+ Science Technology Engineering Art and Math Activities For Ages 3 to 6. New York: Gryphon House, Inc.</div> <div>8. Montés, N., Aloy, P., Ferrer, T., Romero, P. D., Barquero, S., &amp; Carbonell, A. M. (2022). EXPLORIA, STEAM Education at University Level as a New Way to Teach Engineering Mechanics in an Integrated Learning Process. Applied Sciences, 12(10), 1-18. doi:10.3390/app12105105</div> <div>9. Rizki, I. A., Suprpto, N., &amp; Admoko, S. (2022). Exploration of physics concepts with traditional engklek (hopscotch) game: Is it potential in physics ethno-STEM learning? Jurnal Ilmiah Pendidikan Fisika Al-Biruni, 11(1), 19-33. doi:10.24042/jipfalbiruni.v11i1.10900</div> <div>10. Suprpto, N. (2016). Students' Attitudes towards STEM Education: Voices from Indonesian Junior High Schools. 13(1), 75-87. doi:10.12973/tused.10172a</div> |                                                                                  |                 |                     |                     |   |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
|         |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                 |                     |                     |   |   |    |    |    |    |    |    |    |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |        |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |        |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |         |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |         |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |         |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |
| 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 | Mendesripsikan karakteristik proyek-proyek berbasis STEAM.                    | <ol style="list-style-type: none"> <li>1. Mendeskripsikan karakteristik dan komponen proyek-proyek berbasis STEAM.</li> <li>2. Mendeskripsikan pembelajaran berbasis STEAM.</li> <li>3. Menjelaskan contoh-contoh proyek dalam pembelajaran terkait STEAM</li> </ol>                                                                                                                                    | sesuai dengan rubrik penilaian | Flip learning, presentasi, dan diskusi |  |  | 5% |
| 2 | Menemukaneni permasalahan di masyarakat terkait proyek-proyek berbasis STEAM. | <ol style="list-style-type: none"> <li>1. Mengidentifikasi permasalahan yang ditemukan di komunitasnya.</li> <li>2. Menemukaneni permasalahan di masyarakat terkait proyek-proyek berbasis STEAM.</li> <li>3. Menemukan ide proyek STEAM berdasar hasil identifikasi masalah dalam masyarakat</li> <li>4. Merumuskan definisi konseptual atas variabel terkait proyek-proyek berbasis STEAM.</li> </ol> | Sesuai dengan rubrik penilaian | Flip learning, presentasi, dan diskusi |  |  | 5% |
| 3 | Merancang (merencanakan dan menyusun jadwal) proyek STEAM.                    | <ol style="list-style-type: none"> <li>1. Merumuskan latar belakang dan fokus proyek.</li> <li>2. Mengkonstruksi solusi yang melibatkan komponen STEAM.</li> <li>3. Menghasilkan rancangan awal pelaksanaan aksi dalam pengejawantahan variabel treatment</li> <li>4. Merancang uji coba project STEAM di terkait pembelajaran.</li> <li>5. Menyusun timeline proyek.</li> </ol>                        | Sesuai dengan rubrik penilaian | Flip learning, presentasi, dan diskusi |  |  | 5% |
| 4 | Mengembangkan instrumen terkait proyek STEAM.                                 | <ol style="list-style-type: none"> <li>1. Mendesain rancangan awal atau kisi (blue-print) instrument pengukur variabel respon dan rubrik penilaiannya.</li> <li>2. Menghasilkan lembar telaah dan validasi item tes pengukur variabel respon tertelaah.</li> </ol>                                                                                                                                      | Sesuai dengan rubrik penilaian | Flip learning, presentasi, dan diskusi |  |  | 5% |
| 5 | Mengembangkan desain (material) pembelajaran di berbasis STEAM.               | <ol style="list-style-type: none"> <li>1. Menganalisis capaian pembelajaran untuk setiap komponen STEAM.</li> <li>2. Merancang desain (material) pembelajaran di berbasis STEAM.</li> </ol>                                                                                                                                                                                                             | Sesuai dengan rubrik penilaian | Flip learning, presentasi, dan diskusi |  |  | 5% |

|    |                                                                                                                  |                                                                                                                                                                                                               |                                      |                                        |  |  |     |
|----|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|--|--|-----|
| 6  | Mengevaluasi desain pembelajaran di berbasis STEAM.                                                              | 1. 1. Mengevaluasi desain (material) pembelajaran di berbasis STEAM berdasarkan rubrik yang telah ditetapkan.<br>2. 2. Mempertajam desain project STEAM berdasar hasil diskusi dengan ahli dan/atau praktisi. | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 7  | Mendesain draf perlindungan hukum (hak cipta) terkait instrumen dan/atau material pembelajaran di berbasis STEAM | Mendesain draf perlindungan hukum (hak cipta) terkait instrumen dan/atau material pembelajaran di berbasis STEAM.                                                                                             | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 8  | UTS (Sub CPMK 1 sd 7)                                                                                            | UTS Tengah Semester (UTS Tengah Semester Sub CPMK 1-7)                                                                                                                                                        | Sesuai dengan rubrik penilaian       | Portofolio dan proyek                  |  |  | 10% |
| 9  | Mengimplementasi proyek STEAM dalam pembelaran skala mikro (kelas terbatas)                                      | Berinteraksi dengan ahli dan opservasi lapangan terkait solusi rancangan STEAM.                                                                                                                               | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 10 | Menganalisis data hasil implementasi proyek STEAM yang dikembangkan.                                             | 1. 1. Menganalisis hasil implementasi proyek STEAM beserta hasil evaluasinya.<br>2. 2. Mendesain draf laporkan hasil implementasi proyek STEAM beserta hasil evaluasinya.                                     | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 11 | Mengomunikasikan secara oral/lisan untuk hasil implementasi proyek STEAM yang dikembangkan.                      | Mengomunikasikan secara oral/lisan untuk hasil implementasi proyek STEAM yang dikembangkan yang dilengkapi dengan media.                                                                                      | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 12 | Mendesain manuskrip/artikel dari hasil implementasi proyek STEAM yang dikembangkan.                              | Mendesain manuskrip/artikel dari hasil implementasi proyek STEAM yang dikembangkan sesuai dengan standar dan gaya selingkung.                                                                                 | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 13 | Mengevaluasi draf tulisan Ilmiah dari hasil implementasi proyek STEAM yang dikembangkan.                         | Mendesain manuskrip/artikel dari hasil implementasi proyek STEAM yang dikembangkan sesuai dengan standar.                                                                                                     | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 14 | Memfinalisasikan draf tulisan Ilmiah dari hasil implementasi proyek STEAM yang dikembangkan.                     | Memfinalisasikan manuskrip yang telah dibuat ke jurnal-jurnal ilmiah terakreditasi nasional dan/atau jurnal internasional.                                                                                    | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 15 | Memfinalisasikan draf tulisan Ilmiah dari hasil implementasi proyek STEAM yang dikembangkan.                     | 1. 1. Mengaplikasikan OJS.<br>2. 2. Membuat Cover Later.                                                                                                                                                      | Sesuai dengan rubrik penilaian       | Flip learning, presentasi, dan diskusi |  |  | 5%  |
| 16 | UAS (merefleksikan dan mendesain tindak lanjut pembelajaran STEAM)                                               | Sesuai dengan rubrik penilaian                                                                                                                                                                                | Flipped learning melalui LMS (SIDIA) | Penugasan                              |  |  | 20% |



#### Catatan

1. **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.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.
7. **Bentuk Penilaian** meliputi penilaian tes dan non-tes sesuai dengan karakteristik capaian pembelajaran.
8. **Bentuk Pembelajaran** meliputi kuliah, responsi, tutorial, seminar atau bentuk lain yang setara, praktikum, praktik studio, praktik bengkel, praktik lapangan, penelitian, dan pengabdian kepada masyarakat.
9. **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.
10. **Materi Pembelajaran** adalah bahan kajian yang disusun secara sistematis dalam bentuk pokok dan sub-pokok bahasan untuk mendukung pencapaian Sub-CPMK.
11. **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%.
12. TM = Tatap Muka, PT = Penugasan Terstruktur, BM = Belajar Mandiri.