

## ME2101 - Computational Meteorology

|                                                          |    |                                                                                                                                                                                                                                                                                                                                                            |                        |                                   |         |
|----------------------------------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------|---------|
| COURSE LESSON PLAN                                       |    |                                                                                                                                                                                                                                                                                                                                                            |                        |                                   |         |
| STUDY PROGRAM: METEOROLOGY                               |    |                                                                                                                                                                                                                                                                                                                                                            |                        |                                   |         |
| FACULTY/SCHOOL: FACULTY OF EARTH SCIENCES AND TECHNOLOGY |    |                                                                                                                                                                                                                                                                                                                                                            |                        |                                   |         |
| INSTITUT TEKNOLOGI BANDUNG                               |    |                                                                                                                                                                                                                                                                                                                                                            |                        |                                   |         |
| Course Code:<br>ME2102                                   |    | Credits: 3                                                                                                                                                                                                                                                                                                                                                 | Semester: 3            | Course Type:<br>Compulsory course |         |
| Course Name                                              |    | Komputasi Meteorologi                                                                                                                                                                                                                                                                                                                                      |                        |                                   |         |
|                                                          |    | Computational Meteorology                                                                                                                                                                                                                                                                                                                                  |                        |                                   |         |
| Related Course                                           |    | WI1102                                                                                                                                                                                                                                                                                                                                                     | Berpikir Komputasional | Pre-requisite                     |         |
| Study Materials                                          |    | Basic knowledge of the importance of mastering computational technology in meteorology                                                                                                                                                                                                                                                                     |                        |                                   | Expose  |
|                                                          |    | General knowledge of computer elements and computer programming elements                                                                                                                                                                                                                                                                                   |                        |                                   | Expose  |
|                                                          |    | Basic knowledge and skills for computer programming using FORTRAN                                                                                                                                                                                                                                                                                          |                        |                                   | Explore |
|                                                          |    | Reading and writing data files in binary format, including general binary formats and standard binary formats commonly used for archiving weather and climate data, such as NetCDF and GRIB                                                                                                                                                                |                        |                                   | Explore |
|                                                          |    | Basic techniques for visualizing meteorological data using public-domain software, such as GrADS                                                                                                                                                                                                                                                           |                        |                                   | Explore |
| Learning Outcomes                                        |    |                                                                                                                                                                                                                                                                                                                                                            |                        |                                   |         |
| Code                                                     |    | LO                                                                                                                                                                                                                                                                                                                                                         |                        |                                   |         |
| PLO-3.2                                                  |    | Able to process large-scale digital weather and climate data to understand weather and climate phenomena. (C3)                                                                                                                                                                                                                                             |                        |                                   |         |
| PLO-3.3                                                  |    | Able to operate computational tools according to the learned algorithms to solve standard scientific problems in meteorology. (C3)                                                                                                                                                                                                                         |                        |                                   |         |
| Code                                                     | CO | Elements of Course Learning Outcomes (CO)                                                                                                                                                                                                                                                                                                                  |                        |                                   |         |
| PLO-3.2                                                  | 1  | Students are able to apply a computational method to read and store data in binary formats commonly used in meteorology. (C3)                                                                                                                                                                                                                              |                        |                                   |         |
|                                                          | 2  | Students are able to use software to visualize meteorological data. (C3)                                                                                                                                                                                                                                                                                   |                        |                                   |         |
| PLO-3.3                                                  | 3  | Students are able to create simple computer programs to solve problems in the field of meteorology. (C3)                                                                                                                                                                                                                                                   |                        |                                   |         |
| Learning Methods                                         |    | Lectures<br>Group discussions<br>Cooperative learning<br>Problem-based learning                                                                                                                                                                                                                                                                            |                        |                                   |         |
| Learning Modalities                                      |    | Synchronous offline learning<br>Blended/asynchronous online learning                                                                                                                                                                                                                                                                                       |                        |                                   |         |
| Assessment Method                                        |    | Assessment components: Midterm Exam 20%, Final Exam 30%, Practicum 40%, and Assignments 10%.<br>80–100% = A (maximum competency); 75–80% = AB (very good competency); 65–75% = B (good competency); 60–65% = BC (fairly good competency); 55–60% = C (minimum competency); 45–54% = D (below minimum competency); <45% = E (far below minimum competency). |                        |                                   |         |