



## Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Science Education Doctoral Study Program

|                                |  |   | SE   | ME                                       | ST  | EF                                    | R L                               | EΑ                               | RN                             | IIN                               | G F                                | PL                           | <b>.</b> A.                       | V                            |                                  |                            |                            |                   |            |             |       |
|--------------------------------|--|---|--|--|---|---------------------------------------|-----------------------------------|----------------------------------|--------------------------------|-----------------------------------|------------------------------------|------------------------------|-----------------------------------|------------------------------|----------------------------------|----------------------------|----------------------------|-------------------|------------|-------------|-------|
| Courses                        |  |   | CODE   |  |   |                                       | Cou                               | urse I                           | amil                           | у                                 |                                    | Cr                           | edit                              | Wei                          | ght                              |                            | SEME                       | STER              | Coi        | npilat<br>e | ion   |
| Science Educ<br>Development    | ation Curriculun   | 1   | 840010206  | 2  |   |                                       |                                   | dy Pro                           | ogran                          | n Elec                            | ctive                              | Т=                           | 2 P                               | P=0                          | ECTS=5                           | 5.04                       |                            | 2                 | Jan<br>202 | uary 2      | 2,    |
| AUTHORIZAT                     | TION   |   | SP Develo  | per                                      |   |                                       |                                   |                                  |                                | Co                                | ourse                              | Clu                          | ıster                             | Co                           | ordinato                         | r                          | Study                      | Progra<br>linator | am         |             |       |
|                                |  |   | Prof. Dr. W  | ahond                                    | o Wide  | odo, I                                | M.Si                              |                                  |                                |                                   | of. Dr<br>Sl                       | . Wa                         | ahon                              | no W                         | idodo,                           |                            | Pro                        | ıf. Dr. S         | Suyatno    | o, M.Si     | i.    |
| Learning<br>model              | Case Studies   |   |  |  |   |                                       |                                   |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             |       |
| Program                        | PLO study pro  | gram t  | hat is char  | ged t                                    | to the  | cou                                   | ırse                              |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             |       |
| Learning<br>Outcomes           | PLO-12   | 2. Mas  | ster the lates   | t thec                                   | ories r                                       | elate                                 | d to s                            | cienti                           | fic kn                         | owled                             | lge ar                             | nd s                         | ciend                             | ce e                         | ducation                         |                            |                            |                   |            |             |       |
| (PLO)                          | Program Object   | ctives (  | (PO)   |  |   |                                       |                                   |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             |       |
|                                | PO - 1   | Evalua<br>curricu   | ate assumpt<br>ulum develop  | ions,<br>ment                            | currio<br>resul                               | culum<br>ts, an                       | n dev<br>nd scie                  | elopn<br>ence                    | nent<br>educa                  | theor<br>ation o                  | ies, s<br>curric                   | stan<br>ulun                 | dard<br>n res                     | ls, d<br>earc                | evelopm<br>h results             | ent i                      | method                     | ds, eva           | luation    | n mod       | lels, |
|                                | PO - 2   | Develo  | oping a scier  | ice ec                                   | ducatio                                       | on cu                                 | ırricul                           | um at                            | the h                          | igher                             | educ                               | atio                         | n lev                             | /el                          |                                  |                            |                            |                   |            |             |       |
|                                | PLO-PO Matrix  | (   |  |  |   |                                       |                                   |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             |       |
|                                | DO Marin and I   |   | P.O<br>PO-1<br>PO-2  |  |   | D-12                                  |                                   | 201                              |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             |       |
|                                | PO Matrix at th  | ie ena  | of each lea  | rnınç                                    | g stag  | ge (S                                 | ub-P                              | <i>'</i> O)                      |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             |       |
|                                |  |   |  |  |   |                                       |                                   |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             | 1     |
|                                |  |   | P.O  |  |   |                                       |                                   | -                                |                                | -                                 |                                    | 1                            | /eek                              |                              | 44                               | 10                         | 10                         | 4.4               | 4.5        | 4.0         | -     |
|                                |  |   |  | 1  | 2   | 3                                     | 4                                 | 5                                | 6                              | 7                                 | 8                                  | 9                            | 1                                 | 10                           | 11                               | 12                         | 13                         | 14                | 15         | 16          | -     |
|                                |  | PO  |  |  |   |                                       |                                   |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             | -     |
|                                |  | РО  | )-Z  |  |   |                                       |                                   |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             | ]     |
| Short<br>Course<br>Description | This course exar<br>ability to develop<br>studies, and proj  | p sciend  | ce education   |  |   |                                       |                                   |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             |       |
| References                     | Main :   |   |  |  |   |                                       |                                   |                                  |                                |                                   |                                    |                              |                                   |                              |                                  |                            |                            |                   |            |             |       |
|                                | 1. Aris Jur<br>Kampus<br>2. Direktora<br>Kemdikt<br>3. Oerstein<br>4. Archer, I<br>5. Roos, Al<br>6. Wiggins,<br>Virginia: | Merdek<br>at Jend<br>oudristel<br>I, A.C. &<br>E. 2017<br>listair. 2<br>, Grant | ka. Jakarta: Heral Pendid<br>k.<br>& Hunkins, F.<br>. Curriculum<br>005. Curricu | Kemdi<br>likan<br>P. 20<br>Deve<br>lum C | ikbud.<br>Tingg<br>018. C<br>lopme<br>Constri | gi. 20<br>Currici<br>ent Pr<br>uctior | 020.<br>ulum:<br>rincipl<br>n and | Pand<br>Foun<br>les an<br>Critiq | uan<br>datio<br>d Pra<br>ue. L | Buku<br>n, Pri<br>ictice:<br>ondo | Pand<br>nciple<br>s. Nev<br>n: Fal | duai<br>es, a<br>w Yo<br>mer | n M<br>and Is<br>ork: (<br>r Pres | erde<br>ssue<br>Colle<br>ss. | ka Bela<br>s. Londo<br>ege Publi | ijar -<br>on: Pe<br>ishing | Kamp<br>earson.<br>J House | ous Me            | erdeka     | . Jaka      | arta: |

## Supporters:

- 1. Widodo, Wahono & Sudibyo, Elok & Suryanti, Suryanti & Sari, Dhita & Inzanah, I. & Setiawan, Beni. (2020). The Effectiveness of Gadget-Based Interactive Multimedia in Improving Generation Z's Scientific Literacy. Jurnal Pendidikan IPA Indonesia. 9. 248-256. 10.15294/jpii.v9i2.23208.
- Jörg-Robert Schreiber and Hannes Siege (Eds). 2016. Curriculum Framework Education for Sustainable Development. Bonn: PEFC.

| Week- | Final abilities of each learning stage                                      | Evalı  | uation                                       | Learn<br>Studen  | p Learning,<br>ing methods,<br>it Assignments,<br>timated time]   | Learning<br>materials<br>[ References  | Assessment<br>Weight (%) |
|-------|---|--|--|--|---|--|--------------------------|
|       | (Sub-PO)  | Indicator  | Criteria & Form                              | Offline (<br>offline )   | Online ( online )   | ]  |                          |
| (1)   | (2)   | (3)  | (4)  | (5)  | (6)   | (7)  | (8)                      |
| 1     | Evaluate the nature, assumptions, and foundations of curriculum development | 1.Evaluating the nature of Science Education curriculum development 2.Evaluate assumptions and standards for Science Education curriculum development 3.Evaluate the results of curriculum development for the Bachelor of Science Education Study Program | Form of Assessment: Participatory Activities | Offline: discussing the nature, assumptions and foundations of curriculum development, as well as an overview of curriculum development for the Bachelor of Science Education Study Program. 2 x 50' | Studying the literature and making a PPT on the results of the study then uploading the results of the study on SIDIA, synchronously: discussing the nature, assumptions and foundations of curriculum development, as well as an overview of the curriculum development for the Bachelor of Science Education Study Program. 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum preparation Reference: Oerstein, AC & Hunkins, FP 2018. Curriculum: Foundation, Principles, and Issues. London: Pearson.  Material: Curriculum: Curriculum: Foundation, Principles, and Issues. London: Pearson.  Material: Curriculum development guide Reference: Directorate General of Higher Education. 2020. Independent Learning Guidebook Guide - Merdeka Campus. Jakarta: Ministry of Education and Culture. | 5%                       |

|   | 1   | T  | Т   | _  | T   |  |    |
|---|---|--|---|--|---|--|----|
| 2 | Evaluate the nature, assumptions, and foundations of curriculum development | 1.Evaluating the nature of Science Education curriculum development 2.Evaluate assumptions and standards for Science Education curriculum development 3.Evaluate the results of curriculum development for the Bachelor of Science Education Study Program | Form of<br>Assessment :<br>Participatory<br>Activities, Tests | Offline: discussing the nature, assumptions and foundations of curriculum development, as well as an overview of curriculum development for the Bachelor of Science Education Study Program. 2 x 50' | Studying the literature and making a PPT on the results of the study then uploading the results of the study on SIDIA, synchronously: discussing the nature, assumptions and foundations of curriculum development, as well as an overview of the curriculum development for the Bachelor of Science Education Study Program. 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum preparation Reference: Oerstein, AC & Hunkins, FP 2018. Curriculum: Foundation, Principles, and Issues. London: Pearson.  Material: Curriculum development guide Reference: Directorate General of Higher Education. 2020. Independent Learning Guidebook Guide - Merdeka Campus. Jakarta: Ministry of Education and Culture. | 5% |

| 3 | Evaluate the  | 1 Evaluate the   |   | Offline:   | Studving the literature   | Material:  | 5% |
|---|---|--|---|--|---|--|----|
| 3 | Evaluate the nature, assumptions, and foundations of curriculum development | 1.Evaluate the results of curriculum development for the Bachelor of Science Education Study Program 2.Analyzing Curriculum and Educational Politics | Form of<br>Assessment :<br>Participatory<br>Activities, Tests | Offline: discussing the nature, assumptions and foundations of curriculum development, as well as an overview of curriculum development for the Bachelor of Science Education Study Program. 2 x 50' | Studying the literature and making a PPT on the results of the study then uploading the results of the study on SIDIA, synchronously: discussing the nature, assumptions and foundations of curriculum development, as well as an overview of the curriculum development for the Bachelor of Science Education Study Program. 2 x 50' | Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum preparation Reference: Oerstein, AC & Hunkins, FP 2018. Curriculum: Foundation, Principles, and Issues. London: Pearson.  Material: Curriculum development guide Reference: Directorate General of Higher Education. 2020. Independent Learning Guidebook Guide - Merdeka Campus. | 5% |
|   |   |  |   |  |   | Jakarta:<br>Ministry of<br>Education<br>and Culture.   |    |

|   | ,   |          | -  |   | T  | 1  |    |
|---|---|----------|--|---|--|--|----|
| 4 | Evaluating science education curriculum development methods | As<br>Pa | orm of ssessment : articipatory ctivities, Tests | Offline: discussing UBD, application cases, and curriculum development for the Bachelor of Science Education Study Program. 2 x 50' | Study the literature and make a PPT on the results of the study then upload the results of the study on SIDIA, synchronously: UBD and curriculum development 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD. | 5% |

| 5 | Evaluating science<br>education<br>curriculum<br>development<br>methods | 1.Analyzing OBE/OBC 2.Evaluate the implementation of OBE/OBC | Criteria: Presentations and activities Form of Assessment : | Offline:<br>discussing<br>OBE/OBC,<br>application<br>cases, and<br>curriculum                 | Study the literature and make a PPT on the results of the study then upload the results of the study on SIDIA, synchronously: | Material:<br>Curriculum<br>preparation<br>and criticism<br>References:<br>Roos, Alistair.   | 5% |
|---|---|--|---|---|---|---|----|
|   |   |  | Participatory<br>Activities, Tests                          | development<br>for the<br>Bachelor of<br>Science<br>Education<br>Study<br>Program.<br>2 x 50' | Synchronously: OBE/OBC and Curriculum Development 2 x 50'   | 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - |    |
|   |   |  |   |   |   | Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high- quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD.                  |    |

| 6 | Evaluating science education curriculum | 1.Analyzing SNDIKTI and NSES   | Criteria: Presentations and activities                        | Offline:<br>discussing<br>SNDIKTI and   | Study the literature and make a PPT on the results of the study   | Material:<br>Curriculum<br>preparation   | 5% |
|---|---|--|---|---|---|--|----|
|   | development<br>methods                  | 2.Evaluate the implementation of SNDIKTI in the Science Education curriculum | Form of<br>Assessment :<br>Participatory<br>Activities, Tests | NSES, implementation cases, and curriculum development for the Bachelor of Science Education Study Program. 2 x 50' | then upload the results<br>of the study on SIDIA,<br>synchronously:<br>SNDIKTI and NSES<br>and Curriculum<br>development<br>2 x 50' | and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material:             |    |
|   |   |  |   | 2 × 30  |   | Curriculum<br>development<br>methods<br><b>References:</b><br>Aris Junaidi et<br>al. 2020.<br>Preparing the<br>Higher<br>Education |    |
|   |   |  |   |   |   | Curriculum in<br>the Industrial<br>Era 4.0 to<br>Support<br>Independent<br>Learning -<br>Independent<br>Campuses.<br>Jakarta:      |    |
|   |   |  |   |   |   | Ministry of Education and Culture.  Material: UBD Reference:   |    |
|   |   |  |   |   |   | Wiggins,<br>Grant P.<br>2011. The<br>understanding<br>by design<br>guide to<br>creating high-                                      |    |
|   |   |  |   |   |   | quality units /<br>Grant Wiggins<br>and Jay<br>McTighe.<br>Virginia:<br>ASCD.  |    |

|   | ,   |   | 1   | _  | 1   |   |    |
|---|---|---|---|--|---|---|----|
| 7 | Evaluating science education curriculum development methods | 1.Analyze curriculum components 2.Evaluating the Science Education curriculum in terms of curriculum components | Criteria: Presentations and activities  Form of Assessment: Participatory Activities, Tests | Offline: discussing the steps for developing the OBE and SNDIKTI-based Science Education Study Program curriculum. 2 x 50' | Studying literature and making PPT results from studies and case studies then uploading study results to SIDIA, synchronously: steps for curriculum development 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD. | 5% |

| 8 | Evaluating science  | all CPMK                        | Critorio  | LITE           | LITE        | Matarial   | E04 |
|---|---|---------------------------------|---|----------------|-------------|--|-----|
| 8 | Evaluating science education curriculum development methods | all CPMK indicators meeting 1-7 | Criteria: Presentations and activities  Form of Assessment: Participatory Activities, Tests | UTS<br>2 x 50' | UTS 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD. | 5%  |

| g   [ | Evaluating science  | 1 Anah :   | Criteria:  | Offline:  | Studying literature and   | Material   | 506 |
|-------|---|--|--|---|---|--|-----|
| 6     | Evaluating science education curriculum development methods | 1.Analyzing MBKM policies 2.Evaluating the Science Education curriculum in terms of MBKM 3.Evaluating the implementation of the curriculum and MBKM in the case of Bachelor of Science Education | Criteria: Presentations and activities  Form of Assessment: Participatory Activities | Offline: discussing policies and implementation of MBKM in the Bachelor of Science Education curriculum 2 x 50' | Studying literature and making PPT results from studies and case studies then uploading study results to SIDIA, synchronously: MBKM policy and implementation in the Bachelor of Science Education curriculum 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD.  Material: Misser Material: Misser Ministry of Education. 2020. Independent Learning Guidebook Guide - Merdeka Campus. Jakarta: Ministry of Education | 5%  |

| 10 | Evaluating science education curriculum | 1.Analyzing curriculum  | Criteria: Presentations and activities                 | Offline:  | Studying literature and making PPT results   | Material:<br>Curriculum  | 5% |
|----|---|---|--|---|--|--|----|
|    | development<br>methods                  | evaluation 2.Evaluate the implementation and evaluation results of the Science Education curriculum | Form of<br>Assessment :<br>Participatory<br>Activities | curriculum<br>evaluation and<br>case studies<br>2 x 50' | from studies and case<br>studies then uploading<br>study results to SIDIA,<br>synchronously:<br>curriculum evaluation<br>and case studies<br>2 x 50' | preparation<br>and criticism<br>References:<br>Roos, Alistair.<br>2005.<br>Curriculum<br>Construction<br>and Critique.<br>London:<br>Falmer Press.   |    |
|    |   |   |  |   |  | Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD. |    |
|    |   |   |  |   |  | Material: MBKM Library: Directorate General of Higher Education. 2020. Independent Learning Guidebook  |    |
|    |   |   |  |   |  | Guide -<br>Guide -<br>Merdeka<br>Campus.<br>Jakarta:<br>Ministry of<br>Education<br>and Culture.   |    |

| 11 | Dovoloning on  | 15 :  | Cuitorio  | Offlings   | Ctuduing literature and  | Motoricle  | 100/ |
|----|--|---|---|--|--|--|------|
| 11 | Developing an undergraduate science education curriculum | 1.Develop profiles of Bachelor of Science Education graduates according to needs, scientific vision and uniqueness 2.Develop CPL Bachelor of Science Education according to needs, scientific vision and uniqueness 3.Develop relevant study materials 4.Formulate relevant courses 5.Compiling the development results into an Undergraduate Science Education Curriculum Book 6.Create a RPS for 1 selected course according to the dissertation idea | Criteria: Presentations and activities  Form of Assessment: Project Results Assessment / Product Assessment | Offline: completion of individual project assignments for undergraduate science education curriculum development, review and revision of development 2 x 50' | Studying literature and making PPT results from studies and case studies then uploading study results to SIDIA, synchronously: individual project assignments for Bachelor of Science Education curriculum development 2 x 50' | Material: Curriculum preparation and criticism: References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD.  Material: Mibray: Directorate General of Higher Education. 2020. Independent Learning Guidebook Guide - Merdeka Campus. Jakarta: Ministry of Education and Culture. | 10%  |

| 12 | Developing an  | 1.Develon   | Criteria:   | Offline:   | Studying literature and  | Material:   | 10% |
|----|--|---|---|--|--|---|-----|
|    | Developing an undergraduate science education curriculum | 1.Develop profiles of Bachelor of Science Education graduates according to needs, scientific vision and uniqueness 2.Develop CPL Bachelor of Science Education according to needs, scientific vision and uniqueness 3.Develop relevant study materials 4.Formulate relevant courses 5.Compiling the development results into an Undergraduate Science Education Curriculum Book 6.Create a RPS for 1 selected course according to the dissertation idea | Criteria: Presentations and activities  Form of Assessment: Project Results Assessment / Product Assessment | Offline: completion of individual project assignments for undergraduate science education curriculum development, review and revision of development z x 50' | Studying literature and making PPT results from studies and case studies then uploading study results to SIDIA, synchronously: individual project assignments for Bachelor of Science Education curriculum development 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD.  Material: MBKM Library: Directorate General of Higher Education. 2020. Independent Learning Guidebook Guide - Merdeka Campus. | 10% |

| 13 | Develoning an  | 1 Dayslan   | Criteria:   | Offline:   | Studying literature and  | Material:   | 10% |
|----|--|---|---|--|--|---|-----|
| 13 | Developing an undergraduate science education curriculum | 1.Develop profiles of Bachelor of Science Education graduates according to needs, scientific vision and uniqueness 2.Develop CPL Bachelor of Science Education according to needs, scientific vision and uniqueness 3.Develop relevant study materials 4.Formulate relevant courses 5.Compiling the development results into an Undergraduate Science Education Curriculum Book 6.Create a RPS for 1 selected course according to the dissertation idea | Criteria: Presentations and activities  Form of Assessment: Project Results Assessment / Product Assessment | Offline: completion of individual project assignments for undergraduate science education curriculum development, review and revision of development results 2 x 50' | Studying literature and making PPT results from studies and case studies then uploading study results to SIDIA, synchronously: individual project assignments for Bachelor of Science Education curriculum development 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD.  Material: MBKM Library: Directorate General of Higher Education. 2020. Independent Learning Guidebook Guide - Merdeka Campus. Jakarta: Ministry of Education and Culture. | 10% |

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|----|--|---|--|--|--|---|------|
| 14 | Developing an undergraduate science education curriculum | 1.Develop profiles of Bachelor of Science Education graduates according to needs, scientific vision and uniqueness 2.Develop CPL Bachelor of Science Education according to needs, scientific vision and uniqueness 3.Develop relevant study materials 4.Formulate relevant courses 5.Compiling the development results into an Undergraduate Science Education Curriculum Book 6.Create a RPS for 1 selected course according to the dissertation idea | Criteria: Presentations and activities  Form of Assessment: Project Results Assessment / Product Assessment  | Offline: completion of individual project assignments for undergraduate science education curriculum development, review and revision of development results 2 x 50' | Studying literature and making PPT results from studies and case studies then uploading study results to SIDIA, synchronously: individual project assignments for Bachelor of Science Education curriculum development 2 x 50' | Material: Curriculum preparation and criticism References: Roos, Alistair. 2005. Curriculum Construction and Critique. London: Falmer Press.  Material: Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Learning - Independent Campuses. Jakarta: Ministry of Education and Culture.  Material: UBD Reference: Wiggins, Grant P. 2011. The understanding by design guide to creating high-quality units / Grant Wiggins and Jay McTighe. Virginia: ASCD.  Material: MBKM Library: Directorate General of Higher Education. 2020. Independent Learning Guidebook Guide - Merdeka Campus. Jakarta: Ministry of Education and Culture. | 10%  |

| Developing an undergraduate science education curriculum  1.Develop profiles of Bachelor of Science Education graduates according to needs, scientific vision  1.Develop profiles of Bachelor of Science Education graduates according to needs, scientific vision  1.Develop profiles of Bachelor of Science Education graduates according to needs, scientific vision  1.Develop profiles of Bachelor of Science Education activities  1.Develop profiles of Science Education activities  1.Develop profiles of Bachelor of Science Studies then uploading and criticism References: Roos, Alistair. Undergraduate Science assignments or Undergraduate Science assignments or Undergraduate Science assignments or Undergraduate Science Assessment Science Education Science Science Science Assessment Science Education Curriculum Science Science Science Education Curriculum Science |
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| and uniqueness 2. Develop CPL Bachelor of Science Education according to needs, scientific vision and uniqueness 3. Develop relevant study materials 4. Formulate relevant courses 5. Compiling the development results into an Undergraduate Science Education Curriculum development methods References: Aris Junaidi et al. 2020. Preparing the Higher Education Curriculum in the Industrial Era 4.0 to Support Independent Campuses. Jakarta: Ministry of Education Curriculum and Culture.   |

| 16 | Developing an                      | 1.Develop                      | Criteria:                       | UAS:                     | UAS:: completion of                | Material:                | 5% |
|----|------------------------------------|--------------------------------|---------------------------------|--------------------------|------------------------------------|--------------------------|----|
|    | undergraduate<br>science education | profiles of<br>Bachelor of     | Presentations and activities    | completion of individual | individual project assignments for | Curriculum preparation   |    |
|    | curriculum                         |                                |                                 | project                  | undergraduate science              | and criticism            |    |
|    |                                    | Science<br>Education           | Form of                         | assignments              | education curriculum               | References:              |    |
|    |                                    | graduates                      | Assessment :                    | for                      | development, review                | Roos, Alistair.          |    |
|    |                                    | according to                   | Project Results                 | undergraduate            | and revision of                    | 2005.                    |    |
|    |                                    | needs,                         | Assessment / Product Assessment | science                  | development results                | Curriculum               |    |
|    |                                    | scientific vision              | Product Assessment              | education                | 2 x 50'                            | Construction             |    |
|    |                                    | and                            |                                 | curriculum               |                                    | and Critique.<br>London: |    |
|    |                                    | uniqueness                     |                                 | development, review and  |                                    | Falmer Press.            |    |
|    |                                    | 2.Develop CPL                  |                                 | revision of              |                                    | r aimer r ress.          |    |
|    |                                    | Bachelor of                    |                                 | development              |                                    | Material:                |    |
|    |                                    | Science                        |                                 | results                  |                                    | Curriculum               |    |
|    |                                    | Education                      |                                 | 2 x 50'                  |                                    | development              |    |
|    |                                    | according to                   |                                 |                          |                                    | methods                  |    |
|    |                                    | needs,                         |                                 |                          |                                    | References:              |    |
|    |                                    | scientific vision              |                                 |                          |                                    | Aris Junaidi et          |    |
|    |                                    | and                            |                                 |                          |                                    | al. 2020.                |    |
|    |                                    | uniqueness                     |                                 |                          |                                    | Preparing the<br>Higher  |    |
|    |                                    | 3.Develop                      |                                 |                          |                                    | Education                |    |
|    |                                    | relevant study                 |                                 |                          |                                    | Curriculum in            |    |
|    |                                    | materials                      |                                 |                          |                                    | the Industrial           |    |
|    |                                    | 4.Formulate relevant           |                                 |                          |                                    | Era 4.0 to               |    |
|    |                                    | courses                        |                                 |                          |                                    | Support                  |    |
|    |                                    | 5.Compiling the                |                                 |                          |                                    | Independent              |    |
|    |                                    | development                    |                                 |                          |                                    | Learning -               |    |
|    |                                    | results into an                |                                 |                          |                                    | Independent<br>Campuses. |    |
|    |                                    | Undergraduate                  |                                 |                          |                                    | Jakarta:                 |    |
|    |                                    | Science                        |                                 |                          |                                    | Ministry of              |    |
|    |                                    | Education                      |                                 |                          |                                    | Education                |    |
|    |                                    | Curriculum                     |                                 |                          |                                    | and Culture.             |    |
|    |                                    | Book                           |                                 |                          |                                    |                          |    |
|    |                                    | <ol><li>Create a RPS</li></ol> |                                 |                          |                                    | Material:                |    |
|    |                                    | for 1 selected                 |                                 |                          |                                    | UBD                      |    |
|    |                                    | course                         |                                 |                          |                                    | Reference:               |    |
|    |                                    | according to                   |                                 |                          |                                    | Wiggins,<br>Grant P.     |    |
|    |                                    | the dissertation               |                                 |                          |                                    | 2011. The                |    |
|    |                                    | idea                           |                                 |                          |                                    | understanding            |    |
|    |                                    |                                |                                 |                          |                                    | by design                |    |
|    |                                    |                                |                                 |                          |                                    | guide to                 |    |
|    |                                    |                                |                                 |                          |                                    | creating high-           |    |
|    |                                    |                                |                                 |                          |                                    | quality units /          |    |
|    |                                    |                                |                                 |                          |                                    | Grant Wiggins and Jay    |    |
|    |                                    |                                |                                 |                          |                                    | McTighe.                 |    |
|    |                                    |                                |                                 |                          |                                    | Virginia:                |    |
|    |                                    |                                |                                 |                          |                                    | ASCD.                    |    |
|    |                                    |                                |                                 |                          |                                    |                          |    |
|    |                                    |                                |                                 |                          |                                    | Material:                |    |
|    |                                    |                                |                                 |                          |                                    | MBKM                     |    |
|    |                                    |                                |                                 |                          |                                    | Library:                 |    |
|    |                                    |                                |                                 |                          |                                    | Directorate              |    |
|    |                                    |                                |                                 |                          |                                    | General of<br>Higher     |    |
|    |                                    |                                |                                 |                          |                                    | Education.               |    |
|    |                                    |                                |                                 |                          |                                    | 2020.                    |    |
|    |                                    |                                |                                 |                          |                                    | Independent              |    |
|    |                                    |                                |                                 |                          |                                    | Learning                 |    |
|    |                                    |                                |                                 |                          |                                    | Guidebook                |    |
|    |                                    |                                |                                 |                          |                                    | Guide -                  |    |
|    |                                    |                                |                                 |                          |                                    | Merdeka                  |    |
|    |                                    |                                |                                 |                          |                                    | Campus.                  |    |
|    |                                    |                                |                                 |                          |                                    | Jakarta:                 |    |
|    |                                    |                                |                                 | İ                        |                                    | Ministry of              |    |
|    |                                    |                                |                                 |                          |                                    | Education                |    |

**Evaluation Percentage Recap: Case Study** 

| No | Evaluation                                      | Percentage |
|----|---|------------|
| 1. | Participatory Activities                        | 32.5%      |
| 2. | Project Results Assessment / Product Assessment | 55%        |
| 3. | Test  | 17.5%      |
|    |   | 100%       |

Notes

1. Learning Outcomes of Study Program Graduates (PLO - Study Program) are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.

- 2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
- 3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
- 4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
- 5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
- Assessment Criteria are benchmarks used as a measure or measure of learning achievement in assessments based on
  predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased.
  Criteria can be quantitative or qualitative.
- 7. Forms of assessment: test and non-test.
- 8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
- Learning Methods: Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning,
  Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
- 10. Learning materials are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 11. The assessment weight is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
- 12. TM=Face to face, PT=Structured assignments, BM=Independent study.