

## EMI PhD Courses

### Required Curriculum

| Course Code | Course Title  | Level  | Credit | Course Area |
|-------------|---|--------|--------|-------------|
| SED0089     | Seminar on Science and Society                        | PhD    | 2      | Seminar     |
| SED0090     | Seminar on Cognitive perspectives on science learning | PhD    | 2      | Seminar     |
| SED0091     | Seminar on Curriculum, Instruction and Assessment     | PhD    | 2      | Seminar     |
| SED0092     | Seminar on Digital Learning                           | PhD    | 2      | Seminar     |
| SEC8001     | Colloquium (I)<br>(Repeated selection allowed)        | M/ PhD | 2      | Colloquium  |
| SEC8002     | Colloquium (II)<br>(Repeated selection allowed)       | M/ PhD | 2      | Colloquium  |

### Elective Curriculum

| Course Code | Course Title                                   | Level  | Credit | Course Area                    |
|-------------|--|--------|--------|--------------------------------|
| SEC0063     | Introduction to the Nature of Science          | M/ PhD | 3      | Science and Society            |
| SEC0065     | Philosophy of Science and Science Education    | M/ PhD | 3      | Science and Society            |
| SEC0068     | The Philosophy of Biology                      | M/ PhD | 3      | Science and Society            |
| SEC8004     | Studies in Science 、Technology and Society     | M/ PhD | 3      | Science and Society            |
| SEC8007     | Sociology of Knowledge and Science Education   | M/ PhD | 3      | Science and Society            |
| SEC8008     | The Philosophy of Science                      | M/ PhD | 3      | Science and Society            |
| SED0085     | Topics on the Proces of Science Learning       | PhD    | 3      | Cognitive and Science Learning |
| SED0087     | Topics on Beliefs about Knowledge and Learning | PhD    | 3      | Cognitive and Science Learning |
| SED0080     | Topics on Conceptual Change in Science         | PhD    | 3      | Cognitive and Science Learning |
| SEC0006     | Cognitive Psychology and Science Learning      | M/ PhD | 3      | Cognitive and Science Learning |
| SEC0008     | Psychology of Science Learning                 | M/ PhD | 3      | Cognitive and Science Learning |

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|---------|---|--------|---|--|
| SEC0009 | Psychology of Mathematics Learning                    | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0011 | Studies in Science Problem Solving                    | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0012 | Studies in Mathematics Problem Solving                | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0013 | Conceptual Development and Reasoning Ability          | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0043 | Studies in Mathematics Education                      | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0052 | Social Constructivism and Science Education           | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0060 | Theories and Practice of Conceptual Change in Science | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0066 | Topics in Science Learning                            | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0070 | Cognitive Models and Modeling                         | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC0086 | Topics on the Development of Scientific Reasoning     | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC8005 | Tracking the Cognitive Processes of Science Learning  | M/ PhD | 3 | Cognitive and Science Learning         |
| SEC8009 | Conception and reasoning in science practices         | M/ PhD | 3 | Cognitive and Science Learning         |
| SED0013 | Science Curriculum Evaluation                         | PhD    | 3 | Curriculum, Instruction and Assessment |
| SED0082 | Science Teacher Learning and Preparation              | PhD    | 3 | Curriculum, Instruction and Assessment |
| SEC0019 | Analysis of Science Instructional Activities          | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC0022 | Development and Design of Science Curriculum          | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC0055 | Science Texts Analysis                                | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC0074 | Evaluation of Science Learning                        | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC0075 | Evaluation of Mathematics Learning                    | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC0077 | Studies in Mathematics Curriculum                     | M/ PhD | 3 | Curriculum, Instruction                |

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|---------|--|--------|---|--|
|         |  |        |   | and Assessment                         |
| SEC0078 | Theory and Practice of Science Teacher Research  | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC8003 | The Language of Science  | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC8006 | International Comparative Studies in Science Education                                 | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC8010 | Topics in Science Curriculum and Instruction   | M/ PhD | 3 | Curriculum, Instruction and Assessment |
| SEC0051 | Educational Technology in Science Education  | M/ PhD | 3 | Digital Learning                       |
| SEC0053 | Theory and Research of Learning Technological Tools in Science Education               | M/ PhD | 3 | Digital Learning                       |
| SEC0054 | Design of Technology-infused Science Curriculum  | M/ PhD | 3 | Digital Learning                       |
| SEC0082 | Online Game and Virtual World Learning   | M/ PhD | 3 | Digital Learning                       |
| SED0075 | Topics in Science Education Research   | PhD    | 3 | Research Method                        |
| SEC0036 | Research Methodology of Science Education  | M/ PhD | 3 | Research Method                        |
| SEC0037 | Theories of Testing  | M/ PhD | 3 | Research Method                        |
| SEC0038 | Qualitative Research   | M/ PhD | 3 | Research Method                        |
| SEC0039 | Data Analysis(I)   | M/ PhD | 3 | Research Method                        |
| SEC0040 | Data Analysis (II)   | M/ PhD | 3 | Research Method                        |
| SEC0050 | Special Topics on Research in Methodology : Methods for Studying Learning Technologies | M/ PhD | 3 | Research Method                        |
| SEC8011 | Introduction to Structural Equation Modeling   | M/ PhD | 3 | Research Method                        |
| SEC8012 | Academic Writing in Science Education  | M/ PhD | 3 | Research Method                        |