

MULTIDISCIPLINARY SCIENCE CERTIFICATION PLAN

MULTIDISCIPLINARY SCIENCE REQUIREMENTS--39 hours

1. _____ ASTR 1400--Solar System Astronomy
2. _____ ATMO 1300--Introduction to Atmospheric Science
3. _____ BIOL 1403--Biology I
4. _____ BIOL 1404--Biology II
Prerequisite: BIOL 1403
5. _____ CHEM 1107--Principles of Chemistry I (Laboratory)
Corequisite: CHEM 1307
6. _____ CHEM 1307--Principles of Chemistry I
Prerequisite: CHEM 1301 or a score of 50 or better on the Chemistry Placement Exam
7. _____ CHEM 1108--Principles of Chemistry II (Laboratory)
Corequisite: CHEM 1308
8. _____ CHEM 1308--Principles of Chemistry II
Prerequisite: CHEM 1307
9. _____ GEOL 1101--Physical Geology Laboratory
10. _____ GEOL 1303--Physical Geology
11. _____ GEOL 1102--Historical Geology Laboratory
Prerequisite: GEOL 1101
12. _____ GEOL 1304--Historical Geology
Prerequisite: GEOL 1303
13. _____ PHYS 1403--General Physics I (see note)
Prerequisite: MATH 1320 and 1321 or 1550, 1351, 1352, 2322, 2323, 2350, 2360, 3350, 3351, 3354 or 4354
14. _____ PHYS 1404--General Physics II (see note)
Prerequisite: PHYS 1403

NOTE:

Students completing the Physics Emphasis will need these classes instead of PHYS 1403 and 1404:

1. _____ PHYS 1408--Principles of Physics I
Prerequisite or corequisite: MATH 1351
2. _____ PHYS 2401--Principles of Physics II
Prerequisite: PHYS 1408
Prerequisite or corequisite: MATH 1352

TEACHER EDUCATION PROGRAM (TEP)--27 hours--Admission to the Teacher Education Program is required to take these courses. A minimum cumulative (Texas Tech and transfer) GPA of 2.5 is required for admission. Before applying to the Teacher Education Program, please note that you should have earned at least 72 hours on your certification/degree plan before you start taking TEP classes. Apply to the TEP at www.educ.ttu.edu/certification/online_apps.html. Application deadlines are February 1 to begin education courses in the fall term and September 20 to begin in the spring term. These courses must be taken as listed. All coursework must be complete before student teaching. No grade of D, F or I will be accepted. Since this plan and the listed exams are subject to change, this plan should be completed within a period of three calendar years.

Block I (Spring or Fall Semester)

1. _____ EDSE 4310--Schooling and the Adolescent
2. _____ EDSE 4322--Diversity and the Classroom Learning Environment

Block II (Spring or Fall Semester)

1. _____ EDLL 4382--Reading and Writing in the Secondary Classroom
2. _____ EDSE 4311--Curriculum Planning, Development, and Evaluation
3. _____ EDSE 4376--Methods in Science Teaching

Block III--Student Teaching (Spring or Fall Semester)--An overall and teaching field GPA of 2.5 is required to student teach. Student teaching includes attending a Capstone course and completing all Capstone requirements.

1. _____ EDSE 4000 (9 hours)--Student Teaching in the Secondary School
2. _____ EDSE 4330 (3 hours)--Capstone for Secondary Students

EMPHASIS--25-36 hours. Choose one or more of the following emphases. You MUST obtain the signature of Dr. Jennifer Wilhelm to confirm your emphasis by the first semester of your junior year. To obtain this signature, please email her at jennifer.wilhelm@ttu.edu for an appointment.

<input type="checkbox"/>	Biology Emphasis--additional 28-30 semester hours	_____	_____
<input type="checkbox"/>	Life/Earth Emphasis--additional 36 semester hours	_____	_____
<input type="checkbox"/>	Chemistry Emphasis--additional 27-30 semester hours	_____	_____
<input type="checkbox"/>	Geosciences Emphasis--additional 30 semester hours	_____	_____
<input type="checkbox"/>	Physics Emphasis--additional 25-28 semester hours	_____	_____

Check the emphases listed on the following pages for further details.

Dr. Jennifer Wilhelm, Room 270, (806) 742-1997, ext. 229

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BIOLOGY EMPHASIS CONTENT AREA--28-30 hours

1. _____ BIOL 3416--Genetics
_____ **Prerequisites:** BIOL 1401, 1402 or 1403
2. _____ BOT 3401--Plant Physiology (**Prerequisites:** CHEM 3305 and BIOL 1401 or BIOL 1403, 1404)
OR _____ BOT 3403--Comparative Morphology of Plants (**Prerequisite:** BIOL 1403 and 1404 or equivalent)
OR _____ BOT 3404--Evolution and Classification of Plants (**Prerequisites:** BIOL 1401 or 1404)
3. _____ MATH 1321--Trigonometry
_____ **Prerequisites:** Score on the MPE of 4 or higher or MATH 1320 or 1420
4. _____ MATH 2300--Statistical Methods
_____ **Prerequisite:** Score on MPE of 4 or higher
5. _____ MBIO 3400--Microbiology
_____ **Prerequisite:** 3 hours of introductory biology
6. _____ ZOOL 2403--Human Anatomy
_____ **Prerequisite or parallel:** 3 hours of chemistry recommended

130-142 TOTAL DEGREE HOURS

An additional 6 to 8 hours from the following courses:

- _____ BIOL 3304--Human Genetics
_____ **Prerequisite:** BIOL 3416
- _____ BIOL 3309--Principles of Ecology
_____ **Prerequisite:** BIOL 1305 or 1401 or 1402 or 1404
- _____ BIOL 3320--Cell Biology
_____ **Prerequisites:** BIOL 1403, 1404, 3416 and junior standing
- _____ BIOL 4305--Organic Evolution
_____ **Prerequisite:** BIOL 3416
- _____ BOT 3401--Plant Physiology
_____ **Prerequisites:** CHEM 3305 and BIOL 1401 or BIOL 1403, 1404
- _____ BOT 3403--Comparative Morphology of Plants
_____ **Prerequisite:** BIOL 1403 and 1404 or equivalent
- _____ BOT 3404--Evolution and Classification of Plants
_____ **Prerequisite:** BIOL 1401 or 1404
- _____ ZOOL 3406--Comparative Invertebrate Zoology
_____ **Prerequisites:** BIOL 1401 and 1402 or 1403 and 1404
- _____ ZOOL 4312--Animal Behavior
_____ **Prerequisite:** BIOL 1404 or 3309
- _____ ZOOL 4407--Natural History of the Vertebrates
_____ **Prerequisite:** BIOL 1401 and 1402 or BIOL 1403 and 1404

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- ⇒ The State of Texas does criminal background checks on all applicants for Teacher Certification.
 - ⇒ The undergraduate requirements and/or the certification requirements may change according to state regulations.

By signing below, I signify that I understand the contents of this document.

Student Signature: _____

Date: _____

Certification/Degree Advisor Signature: _____

Date: _____

MULTIDISCIPLINARY SCIENCE CERTIFICATION PLAN

LIFE/EARTH SCIENCES EMPHASIS CONTENT AREA--36 hours

1. _____ ATMO 1100--Atmospheric Science Laboratory
 2. _____ BIOL 3416--Genetics
Prerequisite: BIOL 1401 or 1402 or 1403
 3. _____ GEOL 2305--Introduction to Crystallography and Mineralogy
Prerequisites: GEOL 1101, 1303 and CHEM 1307
 4. _____ GEOL 3322--Oceanography
Prerequisite: GEOL 1303 or GEOG 1401 or ATMO 1300
 5. _____ GEOL 3450--Paleontology and Paleoecology
 6. _____ MATH 1321--Trigonometry
Prerequisites: Score on the MPE of 4 or higher or MATH 1320 or 1420
 7. _____ MATH
 8. _____ MBIO 3400--Microbiology
Prerequisite: 3 hours of introductory biology
 9. _____ ZOOL 2403--Human Anatomy
Prerequisite or parallel: 3 hours of chemistry recommended
 10. _____ ZOOL 4407--Natural History of the Vertebrates
Prerequisites: BIOL 1401 and 1402 or BIOL 1403 and 1404
- OR** _____ BOT 3403--Comparative Morphology of Plants
Prerequisite: BIOL 1403 and 1404 or equivalent
- OR** _____ BOT 3404--Evolution and Classification of Plants
Prerequisites: BIOL 1401 or 1404
- ONE additional course from the following:**
- _____ GEOL 3301--Geomorphology and Aerial Photointerpretation
Prerequisite: GEOL 1303, 1101, or consent of instructor
- _____ GEOL 3323--Environmental Geology
Prerequisite: GEOL 1303 or GEOG 1401
- _____ GEOL 4318--Geology of Texas

138-148 TOTAL DEGREE HOURS

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CHEMISTRY EMPHASIS CONTENT AREA--27 to 30 hours

1. _____ CHEM 3105--Organic Chemistry Laboratory I
Prerequisite: CHEM 1108
Corequisite: CHEM 3305
2. _____ CHEM 3301--Descriptive Inorganic Chemistry
Prerequisite: CHEM 1308
3. _____ CHEM 3305--Organic Chemistry I
Prerequisite: CHEM 1308
4. _____ CHEM 3251--Analytical Chemistry Laboratory (**Corequisite:** CHEM 3351)
- OR** _____ CHEM 3141--Analytical Chemical Methods Laboratory (**Corequisite:** CHEM 3341)
5. _____ CHEM 3351--Analytical Chemistry (**Prerequisites:** CHEM 1308, MATH 1352)
- OR** _____ CHEM 3341--Analytical Chemical Methods (**Prerequisite:** CHEM 1308)
6. _____ MATH 1321--Trigonometry
Prerequisites: Score on the MPE of 4 or higher, MATH 1320 or 1420
7. _____ MATH 1351--Calculus I (**Prerequisite:** MATH 1350 or 1321 or 1550 or score on MPE of 5 or 7)
- OR** _____ MATH 1352--Calculus II (**Prerequisite:** MATH 1351 or consent)

129-142 TOTAL DEGREE HOURS

An additional 10 to 12 hours from the following courses:

- _____ CHEM 3106--Organic Chemistry Laboratory II
Prerequisite: CHEM 3105
Corequisite: CHEM 3306
- _____ CHEM 3306--Organic Chemistry II
Prerequisite: CHEM 3305
- _____ CHEM 3107--Physical Chemistry Laboratory I
Corequisite: CHEM 3307 or CH E 3322
- _____ CHEM 3108--Physical Chemistry Laboratory II
Corequisite: CHEM 3308
- _____ CHEM 3307--Physical Chemistry I
Prerequisites: CHEM 1308, PHYS 1404 or 2401, MATH 1352
- _____ CHEM 3308--Physical Chemistry II
Prerequisite: CHEM 3307 or CH E 3322
- _____ CHEM 3310--Molecular Biochemistry
Prerequisite: CHEM 3306
- _____ CHEM 3311--Biological Chemistry I
Prerequisites: CHEM 3306 and BIOL 1402 or 1404
- _____ CHEM 3312--Biological Chemistry II
Prerequisites: CHEM 3311 and BIOL 1401 or 1404
- _____ CHEM 4310--Polymer Chemistry
Prerequisites: CHEM 3306 and 4311 or 3307 or CH E 3322
- _____ CHEM 4311--Physical Chemistry for the Biological Sciences
Prerequisites: CHEM 1308, 3311; PHYS 1404 or 2401; MATH 1352

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GEOSCIENCES EMPHASIS CONTENT AREA--30 hours

1. _____ ATMO 1100--Atmospheric Science Laboratory
2. _____ GEOL 2305--Introduction to Crystallography and Mineralogy
Prerequisites: GEOL 1101, 1303, and CHEM 1307
3. _____ GEOL 3301--Geomorphology and Aerial Photointerpretation
Prerequisite: GEOL 1303, 1101, or consent of instructor
4. _____ GEOL 3322--Oceanography
Prerequisite: GEOL 1303 or GEOG 1401 or ATMO 1300
5. _____ GEOL 3421--Petrology
Prerequisite: GEOL 2305
6. _____ GEOL 3450--Paleontology and Paleoecology
7. _____ MATH 1321--Trigonometry
Prerequisites: Score on the MPE of 4 or higher or MATH 1320 or 1420
8. _____ MATH

132-142 TOTAL DEGREE HOURS

An additional 6 hours from the following courses:

- _____ GEOL 3302--Structural Geology
Prerequisite: GEOL 2303 or PETR 1305
- _____ GEOL 3323--Environmental Geology
Prerequisite: GEOL 1303 or GEOG 1401
- _____ GEOL 4318--Geology of Texas
- _____ GEOL 4324--Geology of Hydrocarbons
Prerequisite: GEOL 1303 and 3302 or ENCO 3385
- _____ GEOL 4332--Spatial Data Analysis and Modeling in Geosciences
Prerequisite: MATH 2300 or equivalent
- _____ GEOL 4362--Tectonics
Prerequisite: Senior standing in geology or consent of instructor

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PHYSICS EMPHASIS CONTENT AREA--25 to 28 hours

1. _____ MATH 1321--Trigonometry
Prerequisites: Score on the MPE of 4 or higher, MATH 1320 or 1420
2. _____ MATH 1351--Calculus I (**Prerequisite:** Score on the MPE of 5 or 7, MATH 1350 or 1550 or 1321)
- OR** _____ MATH 1352--Calculus II (**Prerequisite:** MATH 1351 or consent)
3. _____ PHYS 2402--Principles of Physics III
Prerequisite: PHYS 2401
4. _____ PHYS 3304--Intermediate Physics Laboratory
Prerequisites: PHYS 2402
5. _____ PHYS 3305--Electricity and Magnetism I
Prerequisites: PHYS 2401 and adequate mathematical background
6. _____ PHYS 4304--Mechanics
Prerequisites: PHYS 1408, 2401 or permission of the department chair

127-140 TOTAL DEGREE HOURS

An additional 6 to 9 hours from the following courses:

- _____ PHYS 3306--Electricity and Magnetism II
Prerequisites: PHYS 2401 and adequate mathematical background
- _____ PHYS 3401--Optics
Prerequisites: PHYS 1408 and 2401
- _____ PHYS 4301--Computational Physics
Prerequisites: PHYS 1408, 2401, 2402
- _____ PHYS 4302--Statistical and Thermal Physics
Prerequisites: PHYS 2402 and knowledge of differential equations
- _____ PHYS 4307--Introduction to Quantum Mechanics I
Prerequisite: MATH 3350 or equivalent
- _____ PHYS 4309--Solid State Physics
Prerequisites: PHYS 3305 and knowledge of elementary quantum mechanics

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