

TCNJ STEM MAT Course Overview

Summer-I:

Session-A

(0) Program Orientation Institute: Orientation to Contexts of Teaching & Learning

(1) TCED 560, Integrative-STEM I (3 S.H.)

(2) EPSY 524, Adolescent Development and Learning (3 S.H.)

Session-B

(3) SCED 590, Content area methods (3 S.H.)

Fall:

(4) SCED 578, Equity and Diversity in Public Education (3 S.H.)

(5) SCED 694, Pedagogy and Practice I [with Practicum] (3 S.H.)

(6) STEM Curriculum/Content course [specific to licensure content area] (3 S.H.)
[MAT 590, PHY 570, BIO 570, CHE 570 or TCED 591]

Spring:

(7) SCED 695, Pedagogy and Practice II [Practicum] (6 S.H.)

(8) SPED 523, Content Literacy and Inclusion of Pupils with Disabilities at the
Secondary Level (3 S.H.)

(9) SCED 667, Classroom Inquiry (capstone) (3 S.H.)

Summer-2:

Session-A

(9) SCED 667 continued, Classroom Inquiry (capstone) (0 S.H.)

(10) TCED 660, Integrative-STEM II (3 S.H.)

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Total credits: 33 semester hours

STEM MAT Course Descriptions

Institutes

Institutes will include a variety of topics related to high quality teaching and learning environments, especially in urban or high needs environments.

Examples: (i) Exposure to benefits and challenges of teaching in high needs and urban settings, including shared readings, and site visits to several urban schools and significant community meeting places (with staff from schools and community attending and giving guided input to the MAT students), (ii) Critical examination of habits of mind and practice for teaching in these settings, (iii) Supporting reflective practice as teacher, and (iv) Introduction to the development of the electronic portfolio.

TCED 560 Integrative STEM I (3 S.H.)

This course examines the integrative aspects of teaching secondary content in the STEM fields. High leverage practices in the various STEM content areas will be examined and put into practice. In addition, integrative and interdisciplinary teaching methods will be incorporated using Design and Inquiry as key linkages.

EPSY 524: Adolescent Development and Learning (3 S.H.)

This educational psychology course addresses the interrelated principles of psychology and the Learning Sciences as they apply to human learning and capabilities in multiple educational environments including schools, family and other informal settings. The course content integrates conceptions of learning and knowledge, with an understanding of diversity of learners, and the dynamic interactions of learners in the multiplicity of learning contexts. This content integration initiates prospective teachers into the complexity of teaching and learning and prepares them to participate in the collective efforts to improve the conditions of learning particularly for young people in non-dominant communities. Thus, this course emphasizes the continuously changing contexts of 21st century learning where the emergence of new technologies and new knowledge influence content relevance, communications, meaning making, and future orientation. Thus, this course adopts a range of pedagogical approaches including conversation/dialogue as pedagogy, cooperative and collaborative work, problem-based projects and independent explorations; these will serve as models for student-centered learning with emphases on active participation, personal autonomy, and complex cognitions including creative thinking and deep learning.

SCED 590: Content Area Methods (3 S.H.)

This course immerses students in secondary teaching methods of their specific discipline.

SCED 578: Equity and Diversity in Public Education (3 S. H.)

This course will explore diversity issues, e.g., race, class, gender, as well as how those issues impact classrooms/schools. In addition, this course will examine the achievement gap and its relationship to race, class, gender etc. Multicultural education principles will also be explored in order to transform. Central to the course will be discussions of high leverage teaching practices, e.g., communicating with family, parents, or guardians, about a student. There will also be a research component ((Classroom based or educational research): understanding context, multiculturalism, and other influences and their impact on teaching.

SCED 694: Pedagogy and Practice I (3 S. H.)

This course accompanies the initial field placement experience in the WWTF program. This accompanies the first half of the year-long field placement. Students will have a 4-day (2 full day and ~2 half day) field placement and also meet weekly for presentations, discussions, and in-class discussions of pedagogy and assessment in the STEM fields. Topics include long- and short-term planning, classroom management, and student evaluation. Off-campus field work will be required. The course also includes observation and participation in a classroom under the guidance of a cooperating teacher and supervising professor. Topics discussed in on-campus sessions include curriculum, lesson and unit planning, individualizing instruction, cultural and socio-economic diversity, classroom management, and measurement and evaluation of student progress. Students apply theoretical knowledge in their field placement. The internship takes place in an urban, culturally and linguistically diverse setting.

**MAT 590 or PHY 570 or BIO 570 or CHE 570 or TCED 591
[STEM Curriculum/Content course (3 S.H.)]**

The course will examine the connections between the K-12 STEM content (specific to a student's area of licensure) and college content. Students will also examine standards-based curricula and the content from an advanced pedagogical standpoint.

SCED 695: Pedagogy and Practice II (6 S. H.)

The course includes full time teaching for the 5-day placement period in a classroom under the guidance of a cooperating teacher and supervising professor. This practicum ends with the placement schools' academic year in June.

SPED 523: Content Literacy and Inclusion of Pupils with Disabilities at the Secondary Level (3 S. H.)

This course is designed to give secondary education teachers the skills necessary to manage the reading process within their classrooms and to help pupils with diverse learning needs access critical content materials in STEM fields. Topics covered include: assessment of secondary readers and reading materials in STEM fields, the conceptual basics of student/text interaction, content area literacy, text selection, development of

content area support materials, the legal background for inclusion of pupils with disabilities, co-teaching models, issues in collaboration at the secondary level, and techniques to enhance study skills of secondary level pupils.

SCED 667: Classroom Inquiry (3 S. H.)

This course accompanies Practicum II and will support students in completing the exit requirements for the Master of Arts in Teaching program and prepare them for future roles as teacher-leaders. Emphasis is on three areas: (1) communication - verbal written and electronic; (2) on the interpretation of information amassed across course work; and their integration into a personal and collective understanding of their profession, and (3) the creative presentation of these materials in a public arena as a demonstration of this self-knowledge, of mastery of their content knowledge, and, of a commitment to the teaching profession, specifically to the continuous investment of their selves to lifelong learning and to student learning. This course will extend into May/June to accompany the Spring practicum (SCED695 above), which ends when the placement schools' academic year end.

TCED 660: Integrative STEM II (3 S.H.)

A continuation of integrative-STEM content presented in TCED560 and the content methods courses. This course appears near the end of the M.A.T. program, and is a culminating experience for the teacher candidates. Inquiry and design, instructional practices, and assessment are studied based upon the entire developmental year, resulting in well-defined integrative STEM units/lessons, which richly involve Problem-based Learning methods.