



DREXEL UNIVERSITY

School of
Education

CATALOG

2020-2021

UNDERGRADUATE

A photograph of the Drexel Institute building facade. The building is made of light-colored stone and features a large archway. Above the archway, the words "DREXEL INSTITUTE" are carved in large, capital letters. A winged statue of a woman stands on the archway. Green foliage is visible in the foreground on the left side.

DREXEL INSTITUTE

catalog.drexel.edu

The School of Education

The School of Education offers Pennsylvania Department of Education-approved programs to certify students who want to become teachers. Undergraduate students have the option to choose from a variety of traditional full-time and non-traditional part-time on-campus and online programs. These programs are designed to meet the needs of a variety of diverse learners who wish to pursue a bachelor's degree and Pennsylvania State Certification in elementary (grades PreK-4), middle level (grades 4-8) and/or secondary (grades 7-12).

School of Education undergraduate students have the option to choose from the following program options: BS on-campus (full or part-time) taking day or evening courses, or the part-time Online BS Degree completion program. In addition, any Drexel non-education undergraduate student who is interested in becoming a teacher has the option to enroll in either the BS/MS or BA/MS Dual Degree programs (4 or 5 year options) regardless of their major.

The School of Education (<http://www.drexel.edu/soe/>) seeks to enrich knowledge and practice related to lifespan learning, based on the most current and appropriate research and practice. Our goal is to improve human understanding through programs and activities that emphasize creative uses of human effort, technology, leadership, and problem solving.

Majors

- Design of Learning Technologies (BS) (p. 4)
- Elementary Education (BS) (p. 7)
 - PK-4 (p. 9)
 - PK-4 and Special Education (p. 13)
 - Middle Level Math and English (p. 16)
 - Middle Level Science and Math (p. 23)
 - Middle Level Science and English (p. 20)
- Education: Non-Certification (BS) (p. 27)
- Teacher Education (BS) (p. 28)
 - Biology (p. 31)
 - Chemistry (p. 34)
 - Earth and Space Science (<http://catalog.drexel.edu/undergraduate/schoolofeducation/teachereducation/earthandspace/science/>)
 - English (p. 38)
 - General Science (p. 41)
 - Mathematics (p. 45)
 - Physics (p. 48)
 - Social Studies (p. 51)

Minor

- Design of Learning Technologies (p. 55)
- Education (p. 55)
- Sport Coaching Leadership (p. 55)
- STEM Education (p. 56)

Certificates

- Creativity and Innovation (p. 56)

About the Curriculum

The School of Education's programs apply the most updated trends in theory, instruction, and leadership, with an emphasis on effective teaching integrating the sciences, enhancing teaching by using technology, two central components of every Drexel Education. In addition, this is the only such program in the country to incorporate a six-month paid internship in industry related to the student's area of certification or individual interest.

Certification for classroom instruction is organized according to the two majors, the BS in Elementary Education and the BS in Secondary Education. Below is a list of all certification areas currently offered by the School of Education.

- Elementary education
 - Elementary: PK-4
 - Elementary: PK-4 and Special Education
 - Middle Level Math and English
 - Middle Level Science and English
 - Middle Level Science and Math
- Secondary education (grades 7-12)
 - Biology
 - Chemistry
 - Earth and Space Science
 - English
 - General Science
 - Mathematics
 - Physics
 - Social Studies
 - Environmental Education (grades K-12)

Students may acquire certification in more than one subject area.

The School of Education uses university-wide resources to prepare fully qualified teachers at both the elementary and secondary levels. The Teacher Education Program at Drexel University is closely aligned with National INTASC Teaching Standards as well as the Pennsylvania Department of Education's Four Domains for Professional Teaching. In addition, the Teacher Ed Program has identified seven **Program Outcomes**, which identify the specific qualities that set the Drexel Teacher Candidate apart from other candidates in the field. These program outcomes are directly aligned with the Drexel University Student Learning Priorities (DSLIP). It is expected that students exiting the Teacher Education Program at Drexel University will exhibit these seven standards in his/her professional teaching practice.

Program Outcomes:

1. The teacher candidate demonstrates independent and creative academic leadership skills that can be applied in the classroom, school community and the profession.
2. The teacher candidate understands the changing role of the educator in an increasingly diverse society, and applies this understanding in the classroom, school community and profession.
3. The teacher candidate holds a global perspective on current issues in education, understands best pedagogical practices, and utilizes this knowledge in the classroom, school community and profession.

4. The teacher candidate recognizes the importance of the application of educational research as a tool to explore critical aspects of teaching and learning in PK-12 setting.

5. The teacher candidate demonstrates a strong academic background in all subject areas that meet PDE content requirements, with strong emphasis on mathematics and science.

6. The teacher candidate can effectively integrate tools of technology in curriculum, assessment and instruction to enhance PK-12 student learning.

7. The teacher candidate demonstrates the ability to reflect upon one's professional practice through the successful completion of course work and engagement in experiential learning to promote positive, transformative change within the profession.

Pennsylvania Instructional I Teaching Certifications

There are multiple ways for Drexel University students to obtain their initial and add-on teaching certifications in Pennsylvania while pursuing their current major at Drexel. Education majors have the opportunity to achieve these certifications through the Bachelors of Science Education program, the BS/MS dual degree, the graduate level Post-baccalaureate (PBC) and Masters (MS) in Teaching Learning and Curriculum programs.

Non-teaching education majors may have the opportunity to build teacher certification into their program of study as electives, depending on their major. Those students who cannot manage the whole certification program may opt to participate in the (non-certification) education minor. Undergraduate students also have the option to enroll in as many content courses as can be managed in their undergraduate degree and then finish their teaching certification requirements through the Post-baccalaureate Teaching Certification or Masters in Teaching Learning and Curriculum programs. Additionally, undergraduate non-education majors can pursue a Master's degree in Teaching, Learning, and Curriculum with Teaching Certification through the BA/MS or BS/MS dual degree route while in their current major provided they meet and maintain the program's minimum criteria of a 3.0 cumulative GPA requirement and have completed no more than 90-120 credits at Drexel at the time of applying for the dual degree program.

*Please note that during a Drexel student's senior year, undergraduate students have the option to take up to and including 9 graduate credits in core pedagogy education courses that can be applied to a future graduate level Post-baccalaureate Teacher Certification or MS degree program at Drexel provided that these graduate credits are not required for UG degree completion and the student received a minimum grade of a "B" in those graduate courses.

Please be advised that the Pennsylvania Department of Education requires that all teacher certification candidates must maintain a 3.0 GPA in their degree or certification program in order to be recommended for state certification.

Combination certifications are available from the School of Education. Sample combinations include:

- Grades PreK-4 certification, with certification in Special Education.
- Biology certification, with courses for additional certification in chemistry.
- Chemistry certification, with courses for additional certification in biology.

- Earth and space science certification, with courses for additional certification in chemistry.
- Earth and space science certification, with courses for additional certification in physics.
- Mathematics certification, with courses for additional certification in physics.
- Physics certification, with courses for additional certification in mathematics.

Students pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study.

For more information, please contact the Program Manager or the School of Education at 215.895.6770.

Post-Graduate Opportunities

Students obtain employment in the School District of Philadelphia and neighboring school districts in Pennsylvania and such surrounding states as New Jersey, Delaware, Ohio, and New York. Often, students begin a graduate degree program in combination with their employment.

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List on the Drexel University Writing Center web page. Students scheduling their courses in Banner/DrexelOne can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Cooperative Education

Drexel University has long been known for its co-operative education program, through which students combine periods of full-time, career-related employment with their studies. Internship employment is a requirement for all teacher education majors.

The BS degree is completed in four years. In addition to the Pennsylvania Department of Education's (PDE) state mandated field experiences and 12 week student teaching, this program includes one six-month internship period of full-time employment related to the student's initial area of teacher certification. The goal of the co-op program in teacher education is to provide real-world experiences for future teachers to use in their classrooms.

Students typically participate in co-ops during their fall and winter terms of their sophomore year and pursue varied positions geared directly to their area(s) of certification. Candidates are asked to pursue a position that would allow them to see other areas of education that reach beyond K-12 teaching. This caveat to the requirement allows candidates to understand the broadness and extensive nature of the field of education both nationally and internationally.

Students have interned in a variety of institutions or museums such as the Philadelphia School District, the Philadelphia's Please Touch Museum, Drexel's Academy of Natural Science (<http://www.ansp.org/>) Museum (<http://www.ansp.org/>), the Philadelphia Dream Academy, Children's Hospital of Philadelphia, and the Franklin Institute Science Museum just to name a few.

While the BS/MS 5 year dual degree program offers both a co-op, PA state mandated field experiences and student teaching, the BS/MS 4 year dual degree program only requires the PA state mandated field experiences and student teaching, not a co-op experience.

Facilities

The Drexel Center for the Prevention of School-aged Violence is located within the School of Education at Drexel University, 3141 Chestnut Street, Philadelphia, PA 19104. The mission of the center is to create public awareness around the need for youth-focused, evidence-based efforts aimed at preventing youth violence from occurring in environments where youth grow, learn, and recreate.

Our vision is to help ensure that all youth possess the requisite social and cognitive skills to prevent violence on their own, which includes developing conflict resolution and mediation skills. We also strive to inform policy leaders and stakeholders of the various types of evidence-based activities that prevent school-aged violence.

The Math Forum is a leading center for mathematics and mathematics education on the Internet. Operating under Drexel's School of Education, our mission is to provide resources, materials, activities, person-to-person interactions, and educational products and services that enrich and support teaching and learning in an increasingly technological world.

For more information about these and other School of Education centers, visit the School of Education (<http://www.drexel.edu/soe/>) website.

Design of Learning Technologies

Major: *Design of Learning Technologies*

Degree Awarded: *Bachelor of Science (BS)*

Calendar Type: *Quarter*

Total Credit Hours: *182.0*

Co-op Options: *One Co-op (Four years)*

Classification of Instructional Programs (CIP) code: *13.0607*

Standard Occupational Classification (SOC) code: *25-9099*

About the Program

The Bachelor of Science major in Design of Learning Technologies (DLT) prepares students to build the next generation of information and computing technology for learning. Students learn interdisciplinary skills and knowledge necessary to design, develop, and implement technology-enhanced learning environments for a variety of settings.

Students in the major will be exposed to three major themes in their coursework:

- **Cognition and Learning:** Cognitive/mental processes and representations underlying knowledge and skill acquisition
- **Culture and Society:** Social, cultural, and organizational aspects of teaching and learning, in and outside of schools
- **Design and Technology:** Design and evaluation techniques to enable the development of new and emerging technologies to support learning and teaching

Work across these themes is coordinated to facilitate the development of expertise on the design of learning technologies grounded in strong theories of learning for a wide range of educational contexts (e.g., classrooms, museum exhibits, after-school, summer camps, etc.), audiences (e.g., teachers, students, corporations, children, adults, etc.), and learning environments.

The curriculum combines knowledge of how people learn, learning technology design, and child/adolescent development from the School of Education with design courses in the Westphal College of Media Arts & Design and computational thinking courses in the College of Computing and Informatics. Co-op experiences may include work at software and design companies, non-profits, cultural institutions, or research environments where there are needs for individuals with training in both learning theories and computational design.

Graduates of the program will have strong skills in applying theory to the creation of educational and learning environments. With hands-on courses focused on human learning and technology design, the Design of Learning Technologies major combines expertise in the foundations of education with design and technical expertise that is central for best practices of the application, development, and use of technologies throughout our lifetimes.

Degree Requirements

General Requirements

ANTH 101	Introduction to Cultural Diversity	3.0
BIO 100	Applied Cells, Genetics & Physiology	3.0
BIO 101	Applied Biological Diversity, Ecology & Evolution	3.0
CHEM 111	General Chemistry I	4.0
COM 111	Principles of Communication	3.0
CRTV 301	Foundations in Creativity	3.0
CRTV 303	Creativity in the Workplace	3.0

ECON 201	Principles of Microeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
Literature Requirement (Select one from ENGL 200 - ENGL 335)		3.0
HIST 201	United States History to 1815	4.0
or HIST 202	United States History, 1815-1900	
or HIST 203	United States History since 1900	
INFO 105	Introduction to Informatics	3.0
MATH 101	Introduction to Analysis I	4.0
MATH 102	Introduction to Analysis II	4.0
MUSC 130	Introduction to Music	3.0
PHYS 151	Applied Physics	3.0
PSY 101	General Psychology I	3.0
PSY 330	Cognitive Psychology	3.0
SOC 335	Sociology of Education	3.0

Education Requirements

EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDLT 103	Foundation in Education III: Learning Sciences	3.0
EDUC 105	Freshman Pedagogy Seminar *	3.0
EDUC 120	Child Development I: Typical Development	3.0
EDUC 123	Adolescent Development	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 335	Engaging the Learner	3.0

Design of Learning Technologies Program Requirements

ANTH 370	Ethnographic Methods	3.0
CS 140	Introduction to Multimedia Programming	3.0
DIGM 223	Creative Concept Design	3.0
EDLT 101	Learning, Culture & Technology Workshop I	3.0
EDLT 201	Learning, Culture and Technology Workshop II	3.0
EDLT 238	New Media Literacies	3.0
EDLT 250	Sociocultural Perspectives on Learning	3.0
EDLT 301	Learning, Culture & Technology Workshop III	3.0
EDLT 339	Future Pedagogies	3.0
EDLT 353	Play and Learning in Participatory Cultures	3.0
EDLT 354	Learning In and Out of Schools	3.0
EDLT 491	Senior Project I	3.0
EDLT 492	Senior Project II	3.0
EDLT 493	Senior Project III	3.0
EHRD 205	Organizational Learning & Strategy	3.0
INFO 103	Introduction to Data Science	3.0
INFO 110	Introduction to Human-Computer Interaction	3.0
WEST T480	Special Topics in WEST Studies	3.0

Electives **

Other University Requirements		
CIVC 101	Introduction to Civic Engagement	1.0
COOP 101	Career Management and Professional Development	1.0
UNIV T101	The Drexel Experience	1.0

Total Credits **182.0**

* Students enroll in EDUC 105 three times; Fall, Winter and Spring of Freshman Year.

** Students are encouraged to work with their advisor to select electives or a minor.

Sample Plan of Study

4-Year Spring Summer Coop Cycle*

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDLT 101	3.0 CIVC 101	1.0 COM 111	3.0 VACATION	
ENGL 101 or 111	3.0 CS 140	3.0 EDLT 103	3.0	
EDUC 101	3.0 EDUC 105	1.0 EDUC 105	1.0	
EDUC 105	1.0 ENGL 102 or 112	3.0 ENGL 103 or 113	3.0	
EDUC 120	3.0 MATH 101	4.0 INFO 110	3.0	
UNIV T101	1.0 Free elective	3.0 MATH 102	4.0	
	14	15	17	0
Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
DIGM 223	3.0 CRTV 301	3.0 ANTH 101	3.0 BIO 101	3.0
EDLT 201	3.0 ECON 201	4.0 BIO 100	3.0 EDLT 353	3.0
INFO 105	3.0 EDLT 238	3.0 COOP 101**	1.0 ENGL 200 - ENGL 335	3.0
PSY 101	3.0 EHRD 205	3.0 EDLT 339	3.0 Free electives	6.0
PHYS 151	3.0	EDUC 123	3.0	
		SOC 335	3.0	
	15	13	16	15
Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
CRTV 303	3.0 EDLT 250	3.0 COOP EXPERIENCE	COOP EXPERIENCE	
EDLT 301	3.0 EDUC 324	3.0		
EDLT 354	3.0 EDUC 335	3.0		
HIST 201, 202, or 203	4.0 Free electives	6.0		
Free elective	3.0			
	16	15	0	0
Fourth Year				
Fall	Credits Winter	Credits Spring	Credits	
CHEM 111	4.0 ANTH 370	3.0 EDLT 493	3.0	
EDLT 491	3.0 EDLT 492	3.0 MUSC 130	3.0	
INFO 103	3.0 EDUC 316	3.0 Free electives	9.0	
PSY 330	3.0 EDUC 322	3.0		
WEST T480	3.0 Free elective	3.0		
	16	15	15	

Total Credits 182

* Co-op cycles may vary. Students are assigned a co-op cycle (fall/winter, spring/summer, summer only) based on their co-op program (5-year or 4-year) and major.

** COOP 101 registration is determined by the co-op cycle assigned and may be scheduled in a different term. Select students may be eligible to take COOP 001 in place of COOP 101.

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

Kristen Betts, EdD (*George Washington University*). Clinical Professor. Higher education administration and governance, online blended education, instructional design and educational technology, program assessment and evaluation.

Eric Brewe, PhD (*Arizona State University*). Associate Professor. Physics Education Research, introductory course reform, network analysis in learning, neuromechanisms of learning.

Stephanie Smith Budhai, PhD (*Drexel University*). Associate Clinical Professor. Teacher and higher education, culturally responsive teaching, equity and social justice, online learning, community engagement and service-learning, family involvement and partnerships, and learning technologies.

José Luis Chávez, EdD (*University of Southern California*). Clinical Professor. Higher education leadership and administration.

Rebecca Clothey, PhD (*University of Pittsburgh*) Associate Department Head. Associate Professor. Comparative and international education, education of ethnic and linguistic minorities, sociology of education.

James Connell, PhD (*Louisiana State University*) Founding Clinical Core Director and Research Fellow, A.J. Drexel Autism Institute. Associate Professor. Identifying the variables that influence adult behavior change in community settings; autism intervention; widespread dissemination of evidence-based interventions in school and community settings.

Sandra L. Dika, PhD (*Virginia Tech University*). Associate Professor. Educational research and evaluation.

Kareem Edouard, PhD (*Stanford University*). Assistant Professor. Educational technology; internet-based STEM learning; equity and inclusion in STEM education

Salvatore V. Falletta, EdD (*North Carolina State University*). Clinical Professor. Human Resource intelligence (i.e., HR research and analytics practices); HRD assessment, measurement, and evaluation models and taxonomies; organizational diagnostic models; web-based employee and organizational survey methods, and computational modeling.

Alonzo M. Flowers, III, PhD (*Texas A&M University*). Associate Professor. Education issues including academic identity development of men of color in STEM education, diversity in teaching & learning, research methods/design, and college student development in higher education

Aroutis N. Foster, PhD (*Michigan State University*) Associate Dean for Academic Affairs and Graduate Studies. Professor. Educational psychology and educational technology, especially the following: Motivation; Technological Pedagogical Content Knowledge (TPACK); Immersive Interactive Digital Environments (simulation, games, virtual realities).

Rajashi Ghosh, PhD (*University of Louisville, Kentucky*) Department Chair for Policy, Organization & Leadership. Associate Professor. Mentoring and leader development, workplace incivility, workplace learning and development.

John M. Gould, PhD (*University of Pittsburgh*) Harrisburg EdD Educational Leadership & Change Program. Clinical Professor. Change leadership, curriculum re-design, the impact of technology on learning.

Dominic F. Gullo, PhD (*Indiana University*). Professor. Studying the relative and long-range effects of early schooling experiences in prekindergarten and kindergarten on children's achievement and social adaptation to school routine.

H. Bernard Hall, PhD (*Temple University*). Assistant Professor. Hip-hop Pedagogy, English Education, Urban Teacher Education.

Penny Hammrich, PhD (*University of Minnesota*) *Dean*. Distinguished University Professor. Urban education; science education; genetics; gender equity; science knowledge for conceptual teaching; sport science.

Paul Harrington, PhD (*University of Massachusetts, Boston*) *Director, Center for Labor Markets and Policy*. Professor. Teen and young adult job access; economic outlook, college labor market; workforce development, planning, and development; vocational rehabilitation and job market transition.

Michael J. Haslip, PhD (*Old Dominion University*). Assistant Professor. Early childhood education, social and emotional learning, child guidance strategies, effects of public pre-school attendance.

Deanna Hill, JD, PhD (*University of Pittsburgh*). Associate Clinical Professor. Higher education, international education, education law, education policy

Erin Horvat, PhD (*University of California, Los Angeles*) *Senior Vice Provost for Faculty Affairs*. Professor. Urban education, access and equity, high school dropout, parent involvement/family involvement, community engagement in research.

Jennifer Katz-Buonincontro, PhD (*University of Oregon*) *Associate Dean of Research*. Associate Professor. Educational administration, leadership development, survey & instrument design.

Larry Keiser, PhD (*Drexel University*). Assistant Clinical Professor. Education and corporate/business leaders' creativity and entrepreneurial mindsets; creative school/work environments; neuroscience of creativity; everyday creativity for teachers and educators.

Kristine Kelly, PhD (*University of Wisconsin, Madison*). Associate Clinical Professor. Sociology of gender and development; anthropology of policy; comparative and international education; qualitative research methods; Vietnam and Southeast Asia.

Cameron Kiosoglous, PhD (*Virginia Tech University*) *Program Director*. Assistant Clinical Professor. Coached on the USRowing National Team staff since 2002, including the 2004, 2008, 2012, and 2016 Olympic Games; coaching development; measuring coaching quality; self-insight and reflective practices; coaching leadership; conference presenter; published author.

Valerie Klein, PhD (*Amherst College*). Associate Clinical Professor. Mathematics learning and teaching; teacher's use of formative assessment in mathematics; creating opportunities for rich problem solving in the classroom; examining teachers growth and change; qualitative research methods.

Michael G. Kozak, Ed.D. (*Rowan University*). Assistant Clinical Professor. Leadership, STEAM, online and blended learning environments, systems thinking, experiential learning, K-12 education, and facilitating change

Amanda Lannie, PhD (*Syracuse University*). Assistant Clinical Professor. Applied behavior analysis and special education; School-based consultation; system-wide interventions as a mechanism for delivery

supports to all students; Designing effective and efficient interventions for students with emotional/behavioral disorders.

Vera Lee, EdD (*University of Pennsylvania*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Practitioner Research in online courses to explore inservice/preservice teachers' emerging understandings about issues of diversity; the development of information/digital literacies of urban youth; English language learners.

Bruce Levine, JD (*New York University*). Associate Clinical Professor. Educational policy, school law, public-private partnerships, intersection of business and education.

Kristine Lewis-Grant, PhD (*Temple University*). Clinical Professor. Experiences of students of African descent at predominantly white colleges and universities, college access and college student development, youth civic engagement in urban school reform, qualitative research and evaluation.

William Lynch, PhD (*University of Maryland*). Professor. Curriculum and educational leadership, educational technology, distance learning policy development, higher and adult education.

Constance Lyttle, PhD, JD (*University of Pittsburgh, Duquesne University*). Clinical Professor. Legal rights of gifted and talented children and children with disabilities; inclusive education of exceptional children; special education mediation; special education IEP/IFSP facilitation; resolution session facilitation

Joy Phillips, PhD (*The University of Texas at Austin*). Associate Clinical Professor. Visionary leadership in theory and practice, school reform as innovative problem-setting, thinking qualitatively about school reform. thinking about school reform by drawing. Educational Leadership Program Assessment.

Kathleen Provinzano, PhD (*Marywood University*). Assistant Professor. Educational administration.

Harriette Thurber Rasmussen, EdD (*Fielding Graduate Institute*). Assistant Clinical Professor. Educational leadership and change.

Lori Severino, EdD (*Neumann University*). Assistant Professor. Special education, differentiated instruction, reading, Wilson language, multi-sensory instruction, reading comprehension, assessment, adolescent literacy.

Jason Silverman, PhD (*Vanderbilt University*). Professor. Teaching and learning of advanced mathematical ideas (algebra and calculus); improving teachers' ability to orchestrate and sustain inquiry-based and discussion-based instruction; technology in mathematics education.

Joanne Sloand, EdD (*Duquesne University*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Special Education Leadership, Trauma-informed care, Parent engagement in special education service delivery.

Toni A. Sondergeld, PhD (*University of Toledo*). Associate Professor. Cognitive and affective assessment development; program/grant evaluation; high stakes testing measurement; STEM education; urban education

Bridget Sweeney Blakely, PhD (*Temple University*). Assistant Clinical Professor. Consultation; Positive Behavior Interventions and Supports

(PBIS); Response to Intervention (Rtl); Systems-level change; performance feedback

Mary Jean Tecce DeCarlo, EdD (*University of Pennsylvania*). Associate Clinical Professor. Early literacy development, learning differences, knowledge construction, urban education.

Sarah P. Ulrich, EdD (*Saint Joseph's University*) Associate Dean of Teacher Education and Undergraduate Affairs. Clinical Professor. Cross-cultural, language and academic development, school reform, teacher preparation, teacher retention, teacher residencies in urban contexts.

Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) Program Director, Applied Behavior Analysis and Special Education. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) School of Education, Founder, Drexel School of Education. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Elementary Education

Major: Elementary Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 180.0 - 188.5

Co-op Options: One Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.1202; 13.1311; 13.1316

Standard Occupational Classification (SOC) code: 25-2022

About the Program

Elementary school teachers instruct classes of children in several subjects. Often they work as part of a team with other teachers who are jointly responsible for a group of students in at least one subject.

The BS in Elementary Education uses University-wide resources to prepare fully qualified teacher candidates at the early and elementary education levels. On-campus candidates in the School of Education

participate in one six-month cooperative education (co-op) experience in a professional position related to their area of certification.

Primary teacher certification options include:

- Pre-Kindergarten - Grade 4 (p. 9)
- Pre-Kindergarten - Grade 4 & Special Education (p. 13)
- Middle Level (grades 4-8) Mathematics and English (p. 16)
- Middle Level (grades 4-8) Science and English (p. 20)
- Middle Level (grades 4-8) Science and Mathematics (p. 23)

Candidates may acquire certification in more than one subject area.

Elementary Education, Pre-Kindergarten through Grade 4:

Candidates are certified to teach in pre-kindergarten through 4th grade. The competencies for this concentration include child development (birth through age 5), language development, early literacy and math foundations for preschool years, early intervention, integrating the arts for the developing child and family, and community partnerships.

Elementary Education, Pre-Kindergarten through Grade 4 and

Special Education: Focused study to work with children in pre-kindergarten, kindergarten, and grades 1-4 across subject areas (ages 3-9) within the competencies listed previously. The special education PK-12 certification dual program also seeks to produce professionals who are equipped with the fundamental skills, knowledge, and competencies necessary to meet the needs of the students at risk for school failure and students with disabilities in multiple settings. This certificate program focuses on students at the pre-kindergarten through secondary level. The Special Education PK-12 certification program is intended for those interested in gaining greater skills and expertise in the area of special education and a teaching certificate in the area of PK-12 special education.

Elementary Education, Middle Level: Focused study to work with students in grades 4-6 across subjects and with students in grades 7-8 in two core academic subject(s) the teacher education candidate chooses to pursue:

- Middle School Mathematics and English
- Middle School Science and English
- Middle School Science and Math

Candidates pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study through our DragonsTeach pathway. For more information, contact the program coordinator for the School of Education at 215-895-6770.

Additional Information

More information is available at the School of Education's (<http://www.drexel.edu/soe/>) website.

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

Kristen Betts, EdD (*George Washington University*). Clinical Professor. Higher education administration and governance, online blended education, instructional design and educational technology, program assessment and evaluation.

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Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) *Program Director, Applied Behavior Analysis and Special Education*. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Elementary Education: PK-4

Major: Elementary Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 180.0

Co-op Options: One Co-op (Four years)

Classification of Instructional (CIP) code: 13.1202

Standard Occupational Classification (SOC) code: 25-2031

About the Concentration

This certification option within the BS in Elementary Education (p. 7) enables teachers to work with children in prekindergarten, kindergarten, and grades 1 through 4 (ages 3-9) across subject areas. Required competencies are covered in areas such as child development, language development, early literacy and math foundations for preschool years, early intervention, integrating the arts for the developing child, and family and community partnerships.

Additional Information

For more information about the program, visit the School of Education (<http://drexel.edu/soe/>) website.

Degree Requirements

General Education/Content Requirements

BIO 100 or BIO 161	Applied Cells, Genetics & Physiology General Biology I	3.0
BIO 101 or BIO 162	Applied Biological Diversity, Ecology & Evolution General Biology II	3.0
CHEM 111	General Chemistry I	4.0
CIVC 101	Introduction to Civic Engagement *	1.0
COM 111	Principles of Communication	3.0
COOP 101	Career Management and Professional Development *	1.0
ECON 201	Principles of Microeconomics	4.0
ENGL 101 or ENGL 111	Composition and Rhetoric I: Inquiry and Exploratory Research English Composition I	3.0
ENGL 102 or ENGL 112	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing English Composition II	3.0
ENGL 103 or ENGL 113	Composition and Rhetoric III: Themes and Genres English Composition III	3.0
ENVS 260	Environmental Science and Society	3.0
HIST 275	History of Pennsylvania	3.0
MATH 171	Introduction to Analysis A	3.0
MATH 172	Introduction to Analysis B	3.0
MATH 173 or MATH 107	Introduction to Analysis C Probability and Statistics for Liberal Arts	3.0
MUSC 130	Introduction to Music	3.0
NFS 100	Nutrition, Foods, and Health	2.0
NFS 101	Introduction to Nutrition & Food	1.0
PHYS 151	Applied Physics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
PSY 330	Cognitive Psychology	3.0
SOC 335	Sociology of Education	3.0
UNIV T101	The Drexel Experience *	1.0
English (Literature) elective: Select course between ENGL 200 - ENGL 360		3.0
Free electives		10.0
Pedagogy Requirements		
EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368	Literacy and Content Skill Development PK-12	3.0
EDLT 325	Design for Learning with Digital Media	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar **	3.0
EDUC 120	Child Development I: Typical Development	3.0
EDUC 121	Child Development II: Atypical Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 210	Early Language Development	3.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 236	Early Literacy I	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 306	Assessment of Young Children	3.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 314	Science Teaching Methods	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 326 [WI]	Language Arts Processes	3.0

EDUC 335	Engaging the Learner	3.0
EDUC 336	Early Literacy II	3.0
EDUC 338	Expressive Arts for PK-4	3.0
EDUC 355	Social Studies Teaching Methods	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0
EDUC 411	Family and Community Partnerships	3.0
ESTM 342	Teaching Engineering Concepts to Children	3.0
MTED 417	Mathematics Methods and Content: Early Childhood	3.0
MTED 418	Mathematics Methods and Content	3.0
Student Teaching Experience		
EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0
Total Credits		180.0

* COOP 101, CIVC 101 and UNIV T101 are not required for Education transfer students, instead these 3 credits are replaced with free electives.

** EDUC 105 is taken three times for a total of 3.0 credits.

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 year, 1 co-op

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDUC 105	1.0 BIO 100 or 161	3.0 EDEX 142	3.0 VACATION	
EDUC 101	3.0 CIVC 101*	1.0 EDUC 105	1.0	
EDUC 120	3.0 COM 111	3.0 ENGL 103 or 113	3.0	
ENGL 101	3.0 EDUC 105	1.0 MATH 173 or 107	3.0	
MATH 171	3.0 EDUC 121	3.0 MUSC 130	3.0	
UNIV T101	1.0 ENGL 102 or 112	3.0 PSY 101	3.0	
	MATH 172	3.0		
	14	17	16	0

Second Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
CHEM 111	4.0 BIO 101 or 161	3.0 EDUC 236	3.0 EDUC 210	3.0
EDEX 344	3.0 COOP 101*	1.0 EDUC 326	3.0 EDUC 306	3.0
EDUC 205	1.0 EDEX 368	3.0 EDUC 365	3.0 EDUC 312	3.0
EDUC 308	3.0 EDUC 216	3.0 NFS 100	2.0 EDUC 335	3.0
PSY 330	3.0 EDUC 314	3.0 NFS 101	1.0 HIST 275	3.0
	EDUC 316	3.0 PSY 320	3.0	
	14	16	15	15

Third Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	ECON 201	4.0 EDLT 325	3.0
MTED 417	3.0 EDUC 336	3.0 EDUC 305	1.0 EDUC 324	3.0
		ESTM 342	3.0 EDUC 338	3.0
		PHYS 151	3.0 EDUC 355	3.0
		English (Literature) Elective: ENGL 200 - ENGL 360	3.0 MTED 418	3.0
	3	3	14	15

Fourth Year

Fall	Credits Winter	Credits Spring	Credits
EDUC 405	1.0 EDUC 410	9.0 ENVS 260	3.0
EDUC 409	9.0 SOC 335	3.0 Free electives	10.0
EDUC 411	3.0		
	13	12	13

Total Credits 180

* COOP 101, CIVC 101 and UNIV T101 are not required for Education transfer students, instead these 3 credits are replaced with free electives.

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

Kristen Betts, EdD (*George Washington University*). Clinical Professor. Higher education administration and governance, online blended education, instructional design and educational technology, program assessment and evaluation.

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Elementary Education: PK-4 and Special Education

Major: Elementary Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 188.0

Co-op Options: One Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.1202

Standard Occupational Classification (SOC) code: 25-2022

About the Concentration

This certification option within the BS in Elementary Education (p. 7) enables teachers to work with children in prekindergarten, kindergarten, and grades 1 through 4 (ages 3-9) across subject areas with the addition of being specialized to work with prekindergarten through secondary grade students at risk for disabilities or with disabilities. As with the Elementary PK-4 certification, the program covers required competencies such as child development, language development, early literacy and math foundations for preschool years, early intervention, integration of the arts for the developing child, and family and community partnerships.

Improvements in the diagnosis of learning disabilities at earlier ages have resulted in an increase in the number of students requiring special education. This program is designed to provide the information necessary to understand the complexities of the disabled learner's needs; modify a curriculum appropriately; provide remedial instruction; use technology to address the learner's needs/progress; and manage instruction for students with special needs in the inclusive classroom, as well as additional approaches to assessment and special education teaching techniques.

Additional Information

For more information about the program, visit the School of Education (<http://drexel.edu/soe/>) website.

Degree Requirements

General Education/Content Requirements

BIO 100 or BIO 161	Applied Cells, Genetics & Physiology General Biology I	3.0
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COOP 101	Career Management and Professional Development *	1.0
ECON 201	Principles of Microeconomics	4.0
ENGL 101 or ENGL 111	Composition and Rhetoric I: Inquiry and Exploratory Research English Composition I	3.0
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English (Literature) elective: Select course between ENGL 200 - ENGL 360		3.0
ENVS 260	Environmental Science and Society	3.0
HIST 275	History of Pennsylvania	3.0
MATH 171	Introduction to Analysis A	3.0
MATH 172	Introduction to Analysis B	3.0
MATH 173 or MATH 107	Introduction to Analysis C Probability and Statistics for Liberal Arts	3.0
MUSC 130	Introduction to Music	3.0
NFS 100	Nutrition, Foods, and Health	2.0
NFS 101	Introduction to Nutrition & Food	1.0
PHYS 151	Applied Physics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
PSY 330	Cognitive Psychology	3.0
SOC 335	Sociology of Education	3.0
UNIV T101	The Drexel Experience *	1.0

Pedagogy Requirements

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368	Literacy and Content Skill Development PK-12	3.0
EDLT 325	Design for Learning with Digital Media	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar	3.0
EDUC 120	Child Development I: Typical Development	3.0
EDUC 121	Child Development II: Atypical Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 236	Early Literacy I	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
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EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 314	Science Teaching Methods	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 326 [WI]	Language Arts Processes	3.0
EDUC 335	Engaging the Learner	3.0
EDUC 336	Early Literacy II	3.0
EDUC 338	Expressive Arts for PK-4	3.0
EDUC 355	Social Studies Teaching Methods	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0

EDUC 411	Family and Community Partnerships	3.0
MTED 417	Mathematics Methods and Content: Early Childhood	3.0
MTED 418	Mathematics Methods and Content	3.0
Special Education Core Courses		
EDEX 336	Special Education Law and Processes PK-12	3.0
EDEX 348	Emotional and Behavioral Support of Individuals with Disabilities	3.0
EDEX 349	High Incident Disabilities	3.0
EDEX 350	Teaching Individuals with Low Incident Disabilities	3.0
EDEX 352	Integrating Technology for Learning & Achievement	3.0
EDEX 355	Teaching Students with Autism Spectrum Disorders	3.0
EDEX 378	Special Education: Methods & Practices PK-12	3.0
EDEX 388	Implementing Academic Interventions in Inclusive Educational Environments	3.0
Student Teaching Experience		
EDUC 409	Student Teaching Seminar I	9.0
EDEX 414 [WI]	Special Education Student Teaching Seminar	9.0
Total Credits		188.0

* COOP 101, CIVC 101 and UNIV T101 are not required for Education transfer students, instead these 3 credits are replaced with a 3 credit elective choice of ESTM 342 or EDEX 375.

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

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Sample Plan of Study

4 YR UG Co-op

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDUC 101	3.0 BIO 100 or 161	3.0 EDEX 142	3.0 VACATION	
EDUC 105	1.0 CIVC 101	1.0 EDUC 105	1.0	
EDUC 120	3.0 COM 111	3.0 ENGL 103 or 113	3.0	
ENGL 101 or 111	3.0 EDUC 105	1.0 MATH 173 or 107	3.0	
MATH 171	3.0 EDUC 121	3.0 MUSC 130	3.0	
UNIV T101	1.0 ENGL 102 or 112	3.0 PSY 101	3.0	

Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDEX 344	3.0 BIO 101 or 162	3.0 EDUC 236	3.0 EDEX 350	3.0
EDEX 349	3.0 COOP 101	1.0 EDUC 326	3.0 EDUC 306	3.0
EDUC 205	1.0 EDEX 348	3.0 EDUC 365	3.0 EDUC 312	3.0
EDUC 308	3.0 EDEX 368	3.0 NFS 100	2.0 EDUC 324	3.0
English (Literature) elective: ENGL 200 - ENGL 360	3.0 EDUC 216	3.0 NFS 101	1.0 HIST 275	3.0
	EDUC 314	3.0 PSY 320	3.0	
	EDUC 316	3.0		
	13	19	15	15
Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	EDEX 378	3.0 EDUC 335	3.0
MTED 417	3.0 EDUC 336	3.0 EDEX 388	3.0 EDUC 338	3.0
		EDUC 305	1.0 EDUC 355	3.0
		EDUC 411	3.0 ENVS 260	3.0
		PHYS 151	3.0 MTED 418	3.0
		PSY 330	3.0	
	3	3	16	15
Fourth Year				
Fall	Credits Winter	Credits Spring	Credits	
EDEX 336	3.0 EDEX 355	3.0 CHEM 111	4.0	
EDUC 405	1.0 EDEX 414	9.0 ECON 201	4.0	
EDUC 409	9.0 SOC 335	3.0 EDEX 352	3.0	
		EDLT 325	3.0	
	13	15	14	
Total Credits 188				

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

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Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) *Program Director, Applied Behavior Analysis and Special Education*. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Elementary Education: Middle Level Math and English

Major: Elementary Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 180.0

Co-op Options: One Co-op (Four years)

Classification of Instructional (CIP) code: 13.1202

Standard Occupational Classification (SOC) code: 25-2022

About the Concentration

This certification option within the BS in Elementary Education (p. 7) enables to teachers to work with students in grades 4-6 across subjects and with students in grades 7-8 in the core academic subjects of mathematics and English.

This program addresses the complexities of adolescent development through discussion of theories. It explores the middle school environment, developmentally appropriate middle school programs, strategies for supporting students through the transition to middle school, and the impact of peer pressure on the middle school child.

In addition, this certification area provides: (1) training in how to effectively deliver standards-based academic math content based on age-appropriate understanding and individual and group's needs; (2) courses devoted to teaching, age-appropriate, reading skills, and how to teach and assess writing effectively, as well as a specialized course in the genre of young adult fiction.

Additional Information

For more information about the program, visit the School of Education (<http://drexel.edu/soe/>) website.

Degree Requirements

General Education/Content Requirements

BIO 161	General Biology I	3.0
BIO 162	General Biology II	3.0
CHEM 111	General Chemistry I	4.0
CIVC 101	Introduction to Civic Engagement	1.0
COM 111	Principles of Communication	3.0
COOP 101	Career Management and Professional Development	1.0
ECON 201	Principles of Microeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
ENGL 304	Young Adult Fiction	3.0
ENVS 260	Environmental Science and Society	3.0
HIST 201	United States History to 1815	4.0
HIST 275	History of Pennsylvania	3.0
LING 101	Introduction to Linguistics	3.0
MATH 171	Introduction to Analysis A	3.0
MATH 172	Introduction to Analysis B	3.0
MATH 173	Introduction to Analysis C	3.0
or MATH 107	Probability and Statistics for Liberal Arts	
MATH 205	Survey of Geometry	3.0
MUSC 130	Introduction to Music	3.0
NFS 100	Nutrition, Foods, and Health	2.0
NFS 101	Introduction to Nutrition & Food	1.0
PHYS 151	Applied Physics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
PSY 330	Cognitive Psychology	3.0
SOC 335	Sociology of Education	3.0
UNIV T101	The Drexel Experience	1.0
WRIT 225 [WI]	Creative Writing	3.0
or WRIT 301	Writing Poetry	
Pedagogy Requirements		
EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 346 [WI]	Literacy and Content Skill Development PreK-8	3.0
EDLT 325	Design for Learning with Digital Media	3.0
EDLT 326	Technology Applications for Learning	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar *	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 326 [WI]	Language Arts Processes	3.0
EDUC 328	Language Arts Processes 4-8	3.0
EDUC 355	Social Studies Teaching Methods	3.0
EDUC 360	English/Language Arts Teaching Methods for the Middle Years	1.5
EDUC 361	Middle Years Science Methods	1.5
EDUC 362	Middle Years Social Studies Methods	1.5
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0

MTED 363	Middle Years Mathematics Methods (4-8)	1.5
Student Teaching Experience		
EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0
Free Electives		9.0
MTED 418	Mathematics Methods and Content	3.0
Total Credits		180.0

* EDUC 105 is a 1 credit course for Freshman EDUC majors take three times in Fall Winter and Spring terms.

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

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Sample Plan of Study

4 year, 1 co-op

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 161	3.0 CIVC 101	1.0 EDEX 142	3.0 VACATION	
EDUC 101	3.0 COM 111	3.0 EDUC 105	1.0	
EDUC 105	1.0 EDUC 105	1.0 ENGL 103 or 113	3.0	
EDUC 123	3.0 ENGL 102 or 112	3.0 ENVS 260	3.0	
ENGL 101 or 111	3.0 MATH 172	3.0 LING 101	3.0	
MATH 171	3.0 MUSC 130	3.0 MATH 107 or 173	3.0	
UNIV T101	1.0			
	17	14	16	0
Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 162	3.0 EDUC 306	3.0 EDEX 346	3.0 CHEM 111	4.0
COOP 101	1.0 EDUC 312	3.0 EDUC 216	3.0 EDLT 325	3.0
EDEX 344	3.0 EDUC 365	3.0 EDUC 308	3.0 EDUC 305	1.0
EDUC 205	1.0 PHYS 151	3.0 MATH 205	3.0 PSY 320	3.0
EDUC 223	3.0 WRIT 225 or 301	3.0 MTED 418	3.0 SOC 335	3.0
HIST 275	3.0			
PSY 101	3.0			
	17	15	15	14

Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	EDLT 326	3.0 ECON 201	4.0
EDUC 361	1.5 EDUC 360	1.5 EDUC 316	3.0 EDUC 324	3.0
MTED 363	1.5 EDUC 362	1.5 EDUC 326	3.0 EDUC 328	3.0
		EDUC 355	3.0 ENGL 304	3.0
			PSY 330	3.0
	3	3	12	16
Fourth Year				
Fall	Credits Winter	Credits Spring	Credits	
EDUC 409	9.0 EDUC 410	9.0 ARTH 101	3.0	
Free elective	3.0 Free elective	3.0 EDUC 405	1.0	
		HIST 201	4.0	
		NFS 100	2.0	
		NFS 101	1.0	
		Free elective	3.0	
	12	12	14	
Total Credits 180				

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

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Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) Program Director, Applied Behavior Analysis and Special Education. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written

communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Elementary Education: Middle Level Science and English

Major: Elementary Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 180.0

Co-op Options: One Co-op (Four years)

Classification of Instructional (CIP) code: 13.1202

Standard Occupational Classification (SOC) code: 25-2022

About the Concentration

This certification option within the BS in Elementary Education (p. 7) enables teachers to work with students in grades 4-6 across subjects and with students in grades 7-8 in the core academic subjects of science and English.

This program addresses the complexities of adolescent development through discussion of theories. It explores the middle school environment, developmentally appropriate middle school programs, strategies for supporting students through the transition to middle school, and the impact of peer pressure on the middle school child.

In addition, this certification area provides: (1) training and methodology for teaching physical and life sciences (including using an inquiry-based model of learning, developing authentic assessments, drawing upon a variety of tools, and creating and maintaining a safe laboratory) as well as other skills necessary to meet the needs of diverse learners in science education; (2) courses devoted to teaching age-appropriate reading skills and how to teach and assess writing effectively, as well as a specialized course in the genre of young adult fiction.

Additional Information

For more information about the program, visit the School of Education (<http://drexel.edu/soe/>) website.

Degree Requirements

General Education/Content Requirements

ARTH 101	History of Art I	3.0
BIO 161	General Biology I	3.0
BIO 162	General Biology II	3.0
CHEM 111	General Chemistry I	4.0
CIVC 101	Introduction to Civic Engagement	1.0
COM 111	Principles of Communication	3.0
COOP 101	Career Management and Professional Development	1.0
ECON 201	Principles of Microeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	

ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
ENGL 304	Young Adult Fiction	3.0
ENVS 260	Environmental Science and Society	3.0
Select one of the following		4.0
HIST 201	United States History to 1815	
or HIST 202	United States History, 1815-1900	
or HIST 203	United States History since 1900	
HIST 275	History of Pennsylvania	3.0
LING 101	Introduction to Linguistics	3.0
MATH 171	Introduction to Analysis A	3.0
MATH 172	Introduction to Analysis B	3.0
MATH 173	Introduction to Analysis C	3.0
or MATH 107	Probability and Statistics for Liberal Arts	
MUSC 130	Introduction to Music	3.0
NFS 100	Nutrition, Foods, and Health	2.0
NFS 101	Introduction to Nutrition & Food	1.0
PHYS 151	Applied Physics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
PSY 330	Cognitive Psychology	3.0
SOC 335	Sociology of Education	3.0
UNIV T101	The Drexel Experience	1.0
WRIT 225 [WI]	Creative Writing	3.0
or WRIT 301	Writing Poetry	
Free electives		9.0

Pedagogy Requirements

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 346 [WI]	Literacy and Content Skill Development PreK-8	3.0
EDLT 325	Design for Learning with Digital Media	3.0
EDLT 326	Technology Applications for Learning	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar *	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 306	Assessment of Young Children	3.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 326 [WI]	Language Arts Processes	3.0
EDUC 328	Language Arts Processes 4-8	3.0
EDUC 355	Social Studies Teaching Methods	3.0
EDUC 360	English/Language Arts Teaching Methods for the Middle Years	1.5
EDUC 361	Middle Years Science Methods	1.5
EDUC 362	Middle Years Social Studies Methods	1.5
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0
ESTM 342	Teaching Engineering Concepts to Children	3.0
MTED 363	Middle Years Mathematics Methods (4-8)	1.5
MTED 418	Mathematics Methods and Content	3.0
Student Teaching Experience		
EDUC 409	Student Teaching Seminar I	9.0

EDUC 410 [WI]	DragonsTeach Student Teaching	9.0
Total Credits		180.0

* EDUC 105 is a 1 credit course for Freshman EDUC majors take three times in Fall Winter and Spring terms.

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 year, 1 co-op

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 161	3.0 CIVC 101	1.0 EDEX 142	3.0 VACATION	
EDUC 101	3.0 COM 111	3.0 EDUC 105*	1.0	
EDUC 105*	1.0 EDUC 105*	1.0 ENGL 103 or 113	3.0	
EDUC 123	3.0 ENGL 102 or 112	3.0 ENVS 260	3.0	
ENGL 101 or 111	3.0 MATH 172	3.0 LING 101	3.0	
MATH 171	3.0 MUSC 130	3.0 MATH 173 or 107	3.0	
UNIV T101	1.0			
	17	14	16	0
Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 162	3.0 EDUC 306	3.0 EDEX 346	3.0 CHEM 111	4.0
COOP 101	1.0 EDUC 312	3.0 EDUC 216	3.0 EDLT 325	3.0
EDEX 344	3.0 EDUC 365	3.0 EDUC 308	3.0 EDUC 305	1.0
EDUC 205	1.0 PHYS 151	3.0 MTED 418	3.0 PSY 320	3.0
EDUC 223	3.0 Free elective	3.0	SOC 335	3.0
HIST 275	3.0			
PSY 101	3.0			
	17	15	12	14
Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	EDLT 326	3.0 ECON 201	4.0
EDUC 361	1.5 EDUC 360	1.5 EDUC 316	3.0 EDUC 324	3.0

MTED 363	1.5 EDUC 362	1.5 EDUC 326	3.0 EDUC 328	3.0
		EDUC 355	3.0 ENGL 304	3.0
		Free elective	3.0 PSY 330	3.0
	3	3	15	16

Fourth Year			
Fall	Credits Winter	Credits Spring	Credits
EDUC 409	9.0 EDUC 410	9.0 ARTH 101	3.0
Free elective	3.0 WRIT 225 or 301	3.0 EDUC 405	1.0
		ESTM 342	3.0
		HIST 201, 202, or 203	4.0
		NFS 100	2.0
		NFS 101	1.0
	12	12	14

Total Credits 180

* EDUC 105 is a 1 credit course for Freshman EDUC majors take three times in Fall Winter and Spring terms.

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

Kristen Betts, EdD (*George Washington University*). Clinical Professor. Higher education administration and governance, online blended education, instructional design and educational technology, program assessment and evaluation.

Eric Brewe, PhD (*Arizona State University*). Associate Professor. Physics Education Research, introductory course reform, network analysis in learning, neuromechanisms of learning.

Stephanie Smith Budhai, PhD (*Drexel University*). Associate Clinical Professor. Teacher and higher education, culturally responsive teaching, equity and social justice, online learning, community engagement and service-learning, family involvement and partnerships, and learning technologies.

José Luis Chávez, EdD (*University of Southern California*). Clinical Professor. Higher education leadership and administration.

Rebecca Clothey, PhD (*University of Pittsburgh*) Associate Department Head. Associate Professor. Comparative and international education, education of ethnic and linguistic minorities, sociology of education.

James Connell, PhD (*Louisiana State University*) Founding Clinical Core Director and Research Fellow, A.J. Drexel Autism Institute. Associate Professor. Identifying the variables that influence adult behavior change in community settings; autism intervention; widespread dissemination of evidence-based interventions in school and community settings.

Sandra L. Dika, PhD (*Virginia Tech University*). Associate Professor. Educational research and evaluation.

Kareem Edouard, PhD (*Stanford University*). Assistant Professor. Educational technology; internet-based STEM learning; equity and inclusion in STEM education

Salvatore V. Falletta, EdD (*North Carolina State University*). Clinical Professor. Human Resource intelligence (i.e., HR research and analytics practices); HRD assessment, measurement, and evaluation models and taxonomies; organizational diagnostic models; web-based employee and organizational survey methods, and computational modeling.

Alonzo M. Flowers, III, PhD (*Texas A&M University*). Associate Professor. Education issues including academic identity development of men of color in STEM education, diversity in teaching & learning, research methods/design, and college student development in higher education

Arotis N. Foster, PhD (*Michigan State University*) *Associate Dean for Academic Affairs and Graduate Studies*. Professor. Educational psychology and educational technology, especially the following: Motivation; Technological Pedagogical Content Knowledge (TPACK); Immersive Interactive Digital Environments (simulation, games, virtual realities).

Rajashi Ghosh, PhD (*University of Louisville, Kentucky*) *Department Chair for Policy, Organization & Leadership*. Associate Professor. Mentoring and leader development, workplace Incivility, workplace learning and development.

John M. Gould, PhD (*University of Pittsburgh*) *Harrisburg EdD Educational Leadership & Change Program*. Clinical Professor. Change leadership, curriculum re-design, the impact of technology on learning.

Dominic F. Gullo, PhD (*Indiana University*). Professor. Studying the relative and long-range effects of early schooling experiences in prekindergarten and kindergarten on children's achievement and social adaptation to school routine.

H. Bernard Hall, PhD (*Temple University*). Assistant Professor. Hip-hop Pedagogy, English Education, Urban Teacher Education.

Penny Hammrich, PhD (*University of Minnesota*) *Dean*. Distinguished University Professor. Urban education; science education; genetics; gender equity; science knowledge for conceptual teaching; sport science.

Paul Harrington, PhD (*University of Massachusetts, Boston*) *Director, Center for Labor Markets and Policy*. Professor. Teen and young adult job access; economic outlook, college labor market; workforce development, planning, and development; vocational rehabilitation and job market transition.

Michael J. Haslip, PhD (*Old Dominion University*). Assistant Professor. Early childhood education, social and emotional learning, child guidance strategies, effects of public pre-school attendance.

Deanna Hill, JD, PhD (*University of Pittsburgh*). Associate Clinical Professor. Higher education, international education, education law, education policy

Erin Horvat, PhD (*University of California, Los Angeles*) *Senior Vice Provost for Faculty Affairs*. Professor. Urban education, access and equity, high school dropout, parent involvement/family involvement, community engagement in research.

Jennifer Katz-Buonincontro, PhD (*University of Oregon*) *Associate Dean of Research*. Associate Professor. Educational administration, leadership development, survey & instrument design.

Larry Keiser, PhD (*Drexel University*). Assistant Clinical Professor. Education and corporate/business leaders' creativity and entrepreneurial mindsets; creative school/work environments; neuroscience of creativity; everyday creativity for teachers and educators.

Kristine Kelly, PhD (*University of Wisconsin, Madison*). Associate Clinical Professor. Sociology of gender and development; anthropology of policy; comparative and international education; qualitative research methods; Vietnam and Southeast Asia.

Cameron Kiosoglous, PhD (*Virginia Tech University*) *Program Director*. Assistant Clinical Professor. Coached on the USRowing National Team staff since 2002, including the 2004, 2008, 2012, and 2016 Olympic Games; coaching development; measuring coaching quality; self-insight and reflective practices; coaching leadership; conference presenter; published author.

Valerie Klein, PhD (*Amherst College*). Associate Clinical Professor. Mathematics learning and teaching; teacher's use of formative assessment in mathematics; creating opportunities for rich problem solving in the classroom; examining teachers growth and change; qualitative research methods.

Michael G. Kozak, Ed.D. (*Rowan University*). Assistant Clinical Professor. Leadership, STEAM, online and blended learning environments, systems thinking, experiential learning, K-12 education, and facilitating change

Amanda Lannie, PhD (*Syracuse University*). Assistant Clinical Professor. Applied behavior analysis and special education; School-based consultation; system-wide interventions as a mechanism for delivery supports to all students; Designing effective and efficient interventions for students with emotional/behavioral disorders.

Vera Lee, EdD (*University of Pennsylvania*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Practitioner Research in online courses to explore inservice/preservice teachers' emerging understandings about issues of diversity; the development of information/digital literacies of urban youth; English language learners.

Bruce Levine, JD (*New York University*). Associate Clinical Professor. Educational policy, school law, public-private partnerships, intersection of business and education.

Kristine Lewis-Grant, PhD (*Temple University*). Clinical Professor. Experiences of students of African descent at predominantly white colleges and universities, college access and college student development, youth civic engagement in urban school reform, qualitative research and evaluation.

William Lynch, PhD (*University of Maryland*). Professor. Curriculum and educational leadership, educational technology, distance learning policy development, higher and adult education.

Constance Lyttle, PhD, JD (*University of Pittsburgh, Duquesne University*). Clinical Professor. Legal rights of gifted and talented children and children with disabilities; inclusive education of exceptional children; special education mediation; special education IEP/IFSP facilitation; resolution session facilitation

Joy Phillips, PhD (*The University of Texas at Austin*). Associate Clinical Professor. Visionary leadership in theory and practice, school reform as innovative problem-setting, thinking qualitatively about school reform.

thinking about school reform by drawing, Educational Leadership Program Assessment.

Kathleen Provinzano, PhD (*Marywood University*). Assistant Professor. Educational administration.

Harriette Thurber Rasmussen, EdD (*Fielding Graduate Institute*). Assistant Clinical Professor. Educational leadership and change.

Lori Severino, EdD (*Neumann University*). Assistant Professor. Special education, differentiated instruction, reading, Wilson language, multi-sensory instruction, reading comprehension, assessment, adolescent literacy.

Jason Silverman, PhD (*Vanderbilt University*). Professor. Teaching and learning of advanced mathematical ideas (algebra and calculus); improving teachers' ability to orchestrate and sustain inquiry-based and discussion-based instruction; technology in mathematics education.

Joanne Sloand, EdD (*Duquesne University*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Special Education Leadership, Trauma-informed care, Parent engagement in special education service delivery.

Toni A. Sondergeld, PhD (*University of Toledo*). Associate Professor. Cognitive and affective assessment development; program/grant evaluation; high stakes testing measurement; STEM education; urban education

Bridget Sweeney Blakely, PhD (*Temple University*). Assistant Clinical Professor. Consultation; Positive Behavior Interventions and Supports (PBIS); Response to Intervention (RtI); Systems-level change; performance feedback

Mary Jean Tecce DeCarlo, EdD (*University of Pennsylvania*). Associate Clinical Professor. Early literacy development, learning differences, knowledge construction, urban education.

Sarah P. Ulrich, EdD (*Saint Joseph's University*) *Associate Dean of Teacher Education and Undergraduate Affairs*. Clinical Professor. Cross-cultural, language and academic development, school reform, teacher preparation, teacher retention, teacher residencies in urban contexts.

Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) *Program Director, Applied Behavior Analysis and Special Education*. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written

communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Elementary Education: Middle Level Science and Math

Major: Elementary Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 180.0

Co-op Options: One Co-op (Four years)

Classification of Instructional (CIP) code: 13.1202

Standard Occupational Classification (SOC) code: 25-2022

About the Concentration

This certification option within the BS in Elementary Education (p. 7) enables teachers to work with students in grades 4-6 across subjects and with students in grades 7-8 in the core academic subjects of science and mathematics.

This program addresses the complexities of adolescent development through discussion of theories. It explores the middle school environment, developmentally appropriate middle school programs, strategies for supporting students through the transition to middle school, and the impact of peer pressure on the middle school child.

In addition, this certification area provides: (1) training in how to effectively deliver standards-based academic math content based on age-appropriate understanding, and individual and group's needs; (2) training and methodology for teaching physical and life sciences (including using an inquiry-based model of learning, developing authentic assessments, drawing upon a variety of tools, and creating and maintaining a safe laboratory) as well as other skills necessary to meet the needs of diverse learners in science education.

Additional Information

For more information about the program, visit the School of Education (<http://drexel.edu/soe/>) website.

Degree Requirements

General Education/Content Requirements

ARTH 101	History of Art I	3.0
BIO 161	General Biology I	3.0
BIO 162	General Biology II	3.0
CHEM 111	General Chemistry I	4.0
CIVC 101	Introduction to Civic Engagement	1.0
COM 111	Principles of Communication	3.0
COOP 101	Career Management and Professional Development	1.0
ECON 201	Principles of Microeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	

ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
ENGL 304	Young Adult Fiction	3.0
ENVS 260	Environmental Science and Society	3.0
Select one of the following		4.0
HIST 275	History of Pennsylvania	3.0
HIST 201	United States History to 1815	
or HIST 202	United States History, 1815-1900	
or HIST 203	United States History since 1900	
MATH 171	Introduction to Analysis A	3.0
MATH 172	Introduction to Analysis B	3.0
MATH 173	Introduction to Analysis C	3.0
or MATH 107	Probability and Statistics for Liberal Arts	
MATH 205	Survey of Geometry	3.0
MUSC 130	Introduction to Music	3.0
NFS 100	Nutrition, Foods, and Health	2.0
NFS 101	Introduction to Nutrition & Food	1.0
PHYS 151	Applied Physics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
PSY 330	Cognitive Psychology	3.0
SOC 335	Sociology of Education	3.0
UNIV T101	The Drexel Experience	1.0
Free electives		12.0
Pedagogy Requirements		
EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 346 [WI]	Literacy and Content Skill Development PreK-8	3.0
EDLT 325	Design for Learning with Digital Media	3.0
EDLT 326	Technology Applications for Learning	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 306	Assessment of Young Children	3.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 326 [WI]	Language Arts Processes	3.0
EDUC 328	Language Arts Processes 4-8	3.0
EDUC 355	Social Studies Teaching Methods	3.0
EDUC 360	English/Language Arts Teaching Methods for the Middle Years	1.5
EDUC 361	Middle Years Science Methods	1.5
EDUC 362	Middle Years Social Studies Methods	1.5
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0
ESTM 342	Teaching Engineering Concepts to Children	3.0
MTED 363	Middle Years Mathematics Methods (4-8)	1.5
MTED 418	Mathematics Methods and Content	3.0
Student Teaching Experience		
EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0
Total Credits		180.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 Year, One Co-op

First Year

Fall	Credits	Winter	Credits	Spring	Credits	Summer	Credits
BIO 161	3.0	CIVC 101	1.0	EDEX 142	3.0	VACATION	
EDUC 101	3.0	COM 111	3.0	EDUC 105	1.0		
EDUC 105	1.0	EDUC 105	1.0	ENGL 103 or 113	3.0		
EDUC 123	3.0	ENGL 102 or 112	3.0	ENVS 260	3.0		
ENGL 101 or 111	3.0	MATH 172	3.0	LING 101	3.0		
MATH 171	3.0	MUSC 130	3.0	MATH 173 or 107	3.0		
UNIV T101	1.0						
	17		14		16		0

Second Year

Fall	Credits	Winter	Credits	Spring	Credits	Summer	Credits
BIO 162	3.0	EDUC 306	3.0	EDEX 346	3.0	CHEM 111	4.0
COOP 101	1.0	EDUC 312	3.0	EDUC 216	3.0	EDLT 325	3.0
EDEX 344	3.0	EDUC 365	3.0	EDUC 308	3.0	EDUC 305	1.0
EDUC 205	1.0	PHYS 151	3.0	MATH 205	3.0	PSY 320	3.0
EDUC 223	3.0	Free Elective	3.0	MTED 418	3.0	SOC 335	3.0
HIST 275	3.0						
PSY 101	3.0						
	17		15		15		14

Third Year

Fall	Credits	Winter	Credits	Spring	Credits	Summer	Credits
COOP EXPERIENCE		COOP EXPERIENCE		EDLT 326	3.0	ECON 201	4.0
EDUC 361	1.5	EDUC 360	1.5	EDUC 316	3.0	EDUC 324	3.0
MTED 363	1.5	EDUC 362	1.5	EDUC 326	3.0	EDUC 328	3.0
				EDUC 355	3.0	ENGL 304	3.0
						PSY 330	3.0
	3		3		12		16

Fourth Year			
Fall	Credits Winter	Credits Spring	Credits
EDUC 409	9.0 EDUC 410	9.0 ARTH 101	3.0
Free Elective	3.0 Free Elective	3.0 EDUC 405	1.0
		ESTM 342	3.0
		HIST 201	4.0
		NFS 100	2.0
		NFS 101	1.0
	12	12	14
Total Credits 180			

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

Kristen Betts, EdD (*George Washington University*). Clinical Professor. Higher education administration and governance, online blended education, instructional design and educational technology, program assessment and evaluation.

Eric Brewe, PhD (*Arizona State University*). Associate Professor. Physics Education Research, introductory course reform, network analysis in learning, neuromechanisms of learning.

Stephanie Smith Budhai, PhD (*Drexel University*). Associate Clinical Professor. Teacher and higher education, culturally responsive teaching, equity and social justice, online learning, community engagement and service-learning, family involvement and partnerships, and learning technologies.

José Luis Chávez, EdD (*University of Southern California*). Clinical Professor. Higher education leadership and administration.

Rebecca Clothey, PhD (*University of Pittsburgh*) Associate Department Head. Associate Professor. Comparative and international education, education of ethnic and linguistic minorities, sociology of education.

James Connell, PhD (*Louisiana State University*) Founding Clinical Core Director and Research Fellow, A.J. Drexel Autism Institute. Associate Professor. Identifying the variables that influence adult behavior change in community settings; autism intervention; widespread dissemination of evidence-based interventions in school and community settings.

Sandra L. Dika, PhD (*Virginia Tech University*). Associate Professor. Educational research and evaluation.

Kareem Edouard, PhD (*Stanford University*). Assistant Professor. Educational technology; internet-based STEM learning; equity and inclusion in STEM education

Salvatore V. Falletta, EdD (*North Carolina State University*). Clinical Professor. Human Resource intelligence (i.e., HR research and analytics practices); HRD assessment, measurement, and evaluation models and taxonomies; organizational diagnostic models; web-based employee and organizational survey methods, and computational modeling.

Alonzo M. Flowers, III, PhD (*Texas A&M University*). Associate Professor. Education issues including academic identity development of men of color

in STEM education, diversity in teaching & learning, research methods/design, and college student development in higher education

Aroutis N. Foster, PhD (*Michigan State University*) Associate Dean for Academic Affairs and Graduate Studies. Professor. Educational psychology and educational technology, especially the following: Motivation; Technological Pedagogical Content Knowledge (TPACK); Immersive Interactive Digital Environments (simulation, games, virtual realities).

Rajashi Ghosh, PhD (*University of Louisville, Kentucky*) Department Chair for Policy, Organization & Leadership. Associate Professor. Mentoring and leader development, workplace Incivility, workplace learning and development.

John M. Gould, PhD (*University of Pittsburgh*) Harrisburg EdD Educational Leadership & Change Program. Clinical Professor. Change leadership, curriculum re-design, the impact of technology on learning.

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Penny Hammrich, PhD (*University of Minnesota*) Dean. Distinguished University Professor. Urban education; science education; genetics; gender equity; science knowledge for conceptual teaching; sport science.

Paul Harrington, PhD (*University of Massachusetts, Boston*) Director, Center for Labor Markets and Policy. Professor. Teen and young adult job access; economic outlook, college labor market; workforce development, planning, and development; vocational rehabilitation and job market transition.

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Kristine Kelly, PhD (*University of Wisconsin, Madison*). Associate Clinical Professor. Sociology of gender and development; anthropology of policy; comparative and international education; qualitative research methods; Vietnam and Southeast Asia.

Cameron Kiosoglous, PhD (*Virginia Tech University*) Program Director. Assistant Clinical Professor. Coached on the USRowing National Team

staff since 2002, including the 2004, 2008, 2012, and 2016 Olympic Games; coaching development; measuring coaching quality; self-insight and reflective practices; coaching leadership; conference presenter; published author.

Valerie Klein, PhD (*Amherst College*). Associate Clinical Professor. Mathematics learning and teaching; teacher's use of formative assessment in mathematics; creating opportunities for rich problem solving in the classroom; examining teachers growth and change; qualitative research methods.

Michael G. Kozak, Ed.D. (*Rowan University*). Assistant Clinical Professor. Leadership, STEAM, online and blended learning environments, systems thinking, experiential learning, K-12 education, and facilitating change

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Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Elementary Education: Non-Certification

Major: Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 180.0

Co-op Options: One Co-op (Four years); No Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.0101

Standard Occupational Classification (SOC) code: 25-1081

About the Program

Note: Students will not receive Teaching Certification at the completion of this program.

The Bachelor of Science in Elementary Education Non-Certification track prepares students who are informed about theories of teaching and learning and recognize what happens in PK-12 schooling. Students then use that information to support teaching and learning in non-school-based settings such as educational non-profits, youth advocacy, or educational entrepreneurial ventures. Students learn skills and knowledge necessary to design, develop, and implement learning environments for a variety of settings. Students will work with their academic advisor to select free elective coursework in creativity and innovation, learning technology, special education, sports leadership and coaching, or other education courses based on their interests.

Admission Requirements

- Three years of high school math (algebra I and II, geometry)
- One year of high school lab science
- Standard undergraduate application with essay and two letters of recommendation
- Standard standardized test scores

Degree Requirements

General Education/Content Requirements

BIO 100	Applied Cells, Genetics & Physiology	3.0
or BIO 161	General Biology I	
BIO 101	Applied Biological Diversity, Ecology & Evolution	3.0
or BIO 162	General Biology II	
CHEM 111	General Chemistry I	4.0
CIVC 101	Introduction to Civic Engagement *	1.0
COM 111	Principles of Communication	3.0
COOP 101	Career Management and Professional Development *	1.0
ECON 201	Principles of Microeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
English (Literature) Elective **		3.0
ENVS 260	Environmental Science and Society	3.0
HIST 275	History of Pennsylvania	3.0
MATH 171	Introduction to Analysis A	3.0
MATH 172	Introduction to Analysis B	3.0
MATH 173	Introduction to Analysis C	3.0
or MATH 107	Probability and Statistics for Liberal Arts	

MUSC 130	Introduction to Music	3.0
NFS 100 & NFS 101	Nutrition, Foods, and Health and Introduction to Nutrition & Food	3.0
PHYS 151	Applied Physics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
PSY 330	Cognitive Psychology	3.0
SOC 335	Sociology of Education	3.0
UNIV T101	The Drexel Experience *	1.0
Pedagogy		
EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDLT 325	Design for Learning with Digital Media	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar ***	3.0
EDUC 120	Child Development I: Typical Development	3.0
EDUC 121	Child Development II: Atypical Development	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 210	Early Language Development	3.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 236	Early Literacy I	3.0
EDUC 306	Assessment of Young Children	3.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 326 [WI]	Language Arts Processes	3.0
EDUC 335	Engaging the Learner	3.0
EDUC 338	Expressive Arts for PK-4	3.0
EDUC 411	Family and Community Partnerships	3.0
Free Electives †		51.0
Total Credits		180.0

* UNIV T101, COOP 101 and CIVC 101 are not required for Education transfer students, instead these 3 credits are replaced with ESTM 342.

** English (Literature) elective: Select course between ENGL 200 [WI] - ENGL 365

*** One credit course taken three times.

† Suggested Electives: CRTV 301, CRTV 302, CRTV 303, EDEX 368, EDEX 375 EDLT 101, EDLT 103, EDLT 201, EDLT 238, EDLT 301, EDLT 353, EDUC 112, EDUC 113, EDUC 223, EDUC 305 [WI], EDUC 314, EDUC 322, EDUC 355, EDUC 365, ESTM 342, MTED 418, MTED 428, SCL 101, SCL 102, SCL 201, SCL 203.

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments->

centers/english-philosophy/university-writing-program/writing-intensive-courses/) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 year, 1 co-op

On-campus Full-Time Plan of Study

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDUC 101	3.0 CIVC 101	1.0 EDEX 142	3.0 VACATION	
EDUC 105	1.0 COM 111	3.0 EDUC 105	1.0	
EDUC 120	3.0 EDUC 105	1.0 EDUC 123	3.0	
ENGL 101 or 111	3.0 EDUC 121	3.0 ENGL 103 or 113	3.0	
MATH 171	3.0 ENGL 102 or 112	3.0 MATH 173 or 107	3.0	
UNIV T101	1.0 MATH 172	3.0 PSY 101	3.0	
	14	14	16	0
Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 101 or 161	3.0 BIO 101 or 162	3.0 EDUC 236	3.0 EDUC 210	3.0
CHEM 111	4.0 COOP 101*	1.0 NFS 100 & NFS 101	3.0 EDUC 306	3.0
EDEX 344	3.0 EDUC 335	3.0 PSY 320	3.0 EDUC 316	3.0
EDUC 205	1.0 MUSC 130	3.0 Free electives	6.0 HIST 275	3.0
PSY 330	3.0 Free electives	6.0	Free elective	3.0
Free elective	3.0			
	17	16	15	15
Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	ECON 201	4.0 EDLT 325	3.0
		EDUC 326	3.0 EDUC 312	3.0
		English (Literature)	3.0 EDUC 324	3.0
		Elective: ENGL 200 - ENGL 365		
		PHYS 151	3.0 EDUC 338	3.0
		SOC 335	3.0 Free elective	3.0
	0	0	16	15
Fourth Year				
Fall	Credits Winter	Credits Spring	Credits	
EDUC 411	3.0 EDUC 216	3.0 EDUC 308	3.0	
ENVS 260	3.0 Free electives	12.0 Free electives	9.0	
Free electives	9.0			
	15	15	12	
Total Credits 180				

* Co-op cycles may vary. Students are assigned a co-op cycle (fall/winter, spring/summer, summer-only) based on their co-op program (4-year, 5-year) and major. COOP 101 registration is determined by the co-op cycle assigned and may be scheduled in a different term. Select students may be eligible to take COOP 001 in place of COOP 101.

Transfer/Online Part-Time Plan of Study

First Year (Part-Time)				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDUC 101	3.0 EDUC 105	1.0 EDUC 105	1.0 ENGL 103 or 113	3.0
EDUC 105	1.0 EDUC 120	3.0 EDUC 121	3.0 EDUC 210	3.0
MATH 171	3.0 ENGL 102 or 112	3.0 EDEX 142	3.0 EDUC 210	3.0
ENGL 101 or 111	3.0 MATH 172	3.0 MATH 172	3.0 HIST 275	3.0
	10	10	10	12
Second Year (Part-Time)				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDUC 205	1.0 MUSC 130	3.0 EDUC 123	3.0 EDUC 312	3.0
EDEX 344	3.0 BIO 162	3.0 EDUC 236	3.0 EDUC 322	3.0
BIO 161	3.0 Free elective	3.0 ENGL 205	3.0 EDUC 335	3.0
Free elective	3.0			
	10	9	9	9
Third Year (Part-Time)				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDUC 324	3.0 EDUC 314 (Or Free elective)	3.0 ECON 201	4.0 EDLT 325	3.0
EDUC 326	3.0 EDUC 316	3.0 EDUC 308	3.0 PHYS 151	3.0
PSY 101	3.0 NFS 100 & NFS 101	3.0 SOC 335	3.0 PSY 330	3.0
	9	9	10	9
Fourth Year (Part-Time)				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
CHEM 111	4.0 ENVS 260	3.0 COM 111	3.0 EDUC 338	3.0
EDUC 411	3.0 PSY 320	3.0 EDUC 355 (Or Free elective)	3.0 MTED 418 (Or Free elective)	3.0
Free elective	3.0 Free elective	3.0 ESTM 342	3.0 Free elective	3.0
	10	9	9	9
Fifth Year (Part-Time)				
Fall	Credits Winter	Credits Spring	Credits	
Free electives	9.0 Free electives	9.0 Free electives	9.0	
	9	9	9	

Total Credits 180

Teacher Education

Major: Teacher Education
 Degree Awarded: Bachelor of Science (BS)
 Calendar Type: Quarter
 Total Credit Hours: 181.0-195.0
 Co-op Options: One Co-op (Four years)
 Classification of Instructional Programs (CIP) code: 13.1205
 Standard Occupational Classification (SOC) code: 25-2031

About the Program

The Bachelor of Science in Teacher Education program uses University-wide resources to prepare fully qualified teachers at the secondary education levels in various content areas. Drexel's Bachelor of Science in Secondary Education has technology at its core and with a strong emphasis on STEM subject areas. Certification in secondary education prepares teachers for classrooms in grades 7-12. Candidates may work with their academic advisor to satisfy teacher certification requirements for multiple areas, if desired. Available certification areas include:

- Biology (p. 31)
- Chemistry (p. 34)
- Earth & Space Science (<http://catalog.drexel.edu/undergraduate/schoolofeducation/teachereducation/earthandspace/science/>)
- English (p. 38)
- General Science (p. 41)
- Mathematics (p. 45)
- Physics (p. 48)
- Social Studies (p. 51)

Candidates pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study through our DragonsTeach certification pathway. For more information, contact the program coordinator for the School of Education at 215-895-6770.

Additional Information

More information is available at the School of Education (<http://www.drexel.edu/soe/>) website.

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

Kristen Betts, EdD (*George Washington University*). Clinical Professor. Higher education administration and governance, online blended education, instructional design and educational technology, program assessment and evaluation.

Eric Brewe, PhD (*Arizona State University*). Associate Professor. Physics Education Research, introductory course reform, network analysis in learning, neuromechanisms of learning.

Stephanie Smith Budhai, PhD (*Drexel University*). Associate Clinical Professor. Teacher and higher education, culturally responsive teaching, equity and social justice, online learning, community engagement and service-learning, family involvement and partnerships, and learning technologies.

José Luis Chávez, EdD (*University of Southern California*). Clinical Professor. Higher education leadership and administration.

Rebecca Clothey, PhD (*University of Pittsburgh*) Associate Department Head. Associate Professor. Comparative and international education, education of ethnic and linguistic minorities, sociology of education.

James Connell, PhD (*Louisiana State University*) Founding Clinical Core Director and Research Fellow, A.J. Drexel Autism Institute. Associate Professor. Identifying the variables that influence adult behavior change in community settings; autism intervention; widespread dissemination of evidence-based interventions in school and community settings.

Sandra L. Dika, PhD (*Virginia Tech University*). Associate Professor. Educational research and evaluation.

Kareem Edouard, PhD (*Stanford University*). Assistant Professor. Educational technology; internet-based STEM learning; equity and inclusion in STEM education

Salvatore V. Falletta, EdD (*North Carolina State University*). Clinical Professor. Human Resource intelligence (i.e., HR research and analytics practices); HRD assessment, measurement, and evaluation models and taxonomies; organizational diagnostic models; web-based employee and organizational survey methods, and computational modeling.

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Teacher Education: Biology

Major: Teacher Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 195.0

Co-op Options: One Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.1205

Standard Occupational Classification (SOC) code: 25-2031

About the Biology Concentration

Certification is for grades 7-12

This certification option within the BS in Teacher Education (p. 28) emphasizes coursework in the biological sciences, including genetics, morphology and physiology, biochemistry, microbiology, and ecology. Candidates may work with their academic advisor to satisfy teacher certification requirements for multiple areas, if desired.

The program requires that candidates have a B average (3.0 GPA) in content courses needed for teacher certification in addition to the grade of B or better in each EDEX, EDLT, EDUC, and MTED courses throughout their time in the program. These requirements must be satisfied in order for Drexel to recommend the candidates for teacher certification upon graduation and/or be considered to have completed the program.

Candidates pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study through our DragonsTeach certification pathway. For more information, contact the program coordinator for the School of Education at 215-895-6770.

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Degree Requirements

Degree Requirements

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COOP 101	Career Management and Professional Development	1.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
HIST 289	History of Science: Enlightenment to Modernity	4.0
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
PHIL 251	Ethics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
UNIV T101	The Drexel Experience	1.0

Science Requirements

BIO 131 & BIO 134	Cells and Biomolecules and Cells and Biomolecules Lab	5.0
BIO 132 & BIO 135	Genetics and Evolution and Genetics and Evolution Lab	5.0
BIO 133 & BIO 136	Physiology and Ecology and Anatomy and Ecology Lab	5.0
BIO 201	Human Physiology I	4.0
BIO 214	Principles of Cell Biology	4.0
BIO 215	Techniques in Cell Biology	3.0
BIO 218	Principles of Molecular Biology	4.0
BIO 219 [WI]	Techniques in Molecular Biology	3.0
BIO 228	Evolutionary Biology & Human Health	3.0
BIO 306	Biochemistry Laboratory	2.0
BIO 373	Developmental Biology	3.0
BIO 374	Developmental Biology Lab	2.0
BIO 404	Structure and Function of Biomolecules	4.0
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
CHEM 241	Organic Chemistry I	4.0
CHEM 242	Organic Chemistry II	4.0
CHEM 244	Organic Chemistry Laboratory I	3.0
CHEM 245	Organic Chemistry Laboratory II	3.0
ENVS 230	General Ecology	3.0
ENVS 284	Physiological and Population Ecology	3.0
PHYS 152	Introductory Physics I	4.0
PHYS 153	Introductory Physics II	4.0

Pedagogy Requirements

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368	Literacy and Content Skill Development PK-12	3.0
or EDEX 366	Literacy and Content Skill Development 7-12	
EDLT 325	Design for Learning with Digital Media	3.0
EDLT 326	Technology Applications for Learning	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar	3.0
EDUC 113	Organizational Structure of Secondary Schools	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0

EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 315	Secondary Science Teaching Methods	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0
Student Teaching Experience		
EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0
Total Credits		195.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 year, 1 co-op

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 131 & BIO 134	5.0 BIO 132 & BIO 135	5.0 BIO 133 & BIO 136	5.0 VACATION	
EDUC 101	3.0 CIVC 101	1.0 EDEX 142	3.0	
EDUC 105	1.0 EDUC 105	1.0 EDUC 105	1.0	
ENGL 101 or 111	3.0 EDUC 113	3.0 EDUC 123	3.0	
MATH 121	4.0 ENGL 102 or 112	3.0 ENGL 103 or 113	3.0	
UNIV T101	1.0 MATH 122	4.0 MATH 123	4.0	
	17	17	19	0
Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 201	4.0 BIO 215	3.0 BIO 214	4.0 BIO 218	4.0
CHEM 101	3.5 CHEM 102	4.5 CHEM 241	4.0 CHEM 242	4.0
COOP 101	1.0 EDUC 216	3.0 EDEX 366 or 368	3.0 EDLT 325	3.0
EDEX 344	3.0 PSY 101	3.0 EDUC 305	1.0 EDUC 322	3.0
EDUC 205	1.0	EDUC 308	3.0 PHYS 153	4.0
EDUC 223	3.0	PHYS 152	4.0	
EDUC 365	3.0			
	18.5	13.5	19	18

Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	BIO 219	3.0 BIO 228	3.0
EDUC 315	3.0 CHEM 244	3.0 BIO 373	3.0 BIO 306	2.0
		BIO 374	2.0 EDUC 312	3.0
		EDLT 326	3.0 EDUC 324	3.0
		EDUC 316	3.0 ENVS 230	3.0
	3	3	14	14

Fourth Year				
Fall	Credits Winter	Credits Spring	Credits	
BIO 404	4.0 EDUC 410	9.0 CHEM 245	3.0	
EDUC 409	9.0 ENVS 284	3.0 EDUC 405	1.0	
		HIST 289	4.0	
		PHIL 251	3.0	
		PSY 320	3.0	
	13	12	14	

Total Credits 195

4 year, no co-op

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 131 & BIO 134	5.0 BIO 132 & BIO 135	5.0 BIO 133 & BIO 136	5.0 VACATION	
ENGL 101 or 111	3.0 CIVC 101	1.0 ENGL 103 or 113	3.0	
EDUC 101	3.0 ENGL 102 or 112	3.0 EDEX 142	3.0	
EDUC 105	1.0 EDUC 105	1.0 EDUC 105	1.0	
MATH 121	4.0 EDUC 113	3.0 EDUC 123	3.0	
UNIV T101	1.0 MATH 122	4.0 MATH 123	4.0	
	17	17	19	0

Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 201	4.0 BIO 215	3.0 BIO 214	4.0 VACATION	
CHEM 101	3.5 CHEM 102	4.5 CHEM 241	4.0	
EDEX 344	3.0 EDUC 216	3.0 EDEX 366 or 368	3.0	
EDUC 205	1.0 EDUC 322	3.0 EDUC 305	1.0	
EDUC 223	3.0 PSY 101	3.0 EDUC 308	3.0	
EDUC 365	3.0	PHYS 152	4.0	
	17.5	16.5	19	0

Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 218	4.0 BIO 219	3.0 BIO 228	3.0 VACATION	
CHEM 242	4.0 BIO 373	3.0 BIO 306	2.0	
EDLT 325	3.0 BIO 374	2.0 EDUC 312	3.0	
EDUC 315	3.0 CHEM 244	3.0 EDUC 324	3.0	
PHYS 153	4.0 EDLT 326	3.0 ENVS 230	3.0	
		EDUC 316	3.0	
	18	17	14	0

Fourth Year				
Fall	Credits Winter	Credits Spring	Credits	
BIO 404	4.0 EDUC 410	9.0 CHEM 245	3.0	
EDUC 409	9.0 ENVS 284	3.0 EDUC 405	1.0	
		HIST 289	4.0	
		PHIL 251	3.0	
		PSY 320	3.0	

	Free elective	1.0
13	12	15
Total Credits 195		

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

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Stephanie Smith Budhai, PhD (*Drexel University*). Associate Clinical Professor. Teacher and higher education, culturally responsive teaching, equity and social justice, online learning, community engagement and service-learning, family involvement and partnerships, and learning technologies.

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James Connell, PhD (*Louisiana State University*) Founding Clinical Core Director and Research Fellow, A.J. Drexel Autism Institute. Associate Professor. Identifying the variables that influence adult behavior change in community settings; autism intervention; widespread dissemination of evidence-based interventions in school and community settings.

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Salvatore V. Falletta, EdD (*North Carolina State University*). Clinical Professor. Human Resource intelligence (i.e., HR research and analytics practices); HRD assessment, measurement, and evaluation models and taxonomies; organizational diagnostic models; web-based employee and organizational survey methods, and computational modeling.

Alonzo M. Flowers, III, PhD (*Texas A&M University*). Associate Professor. Education issues including academic identity development of men of color in STEM education, diversity in teaching & learning, research methods/design, and college student development in higher education

Arotis N. Foster, PhD (*Michigan State University*) Associate Dean for Academic Affairs and Graduate Studies. Professor. Educational psychology and educational technology, especially the following: Motivation; Technological Pedagogical Content Knowledge (TPACK);

Immersive Interactive Digital Environments (simulation, games, virtual realities).

Rajashi Ghosh, PhD (*University of Louisville, Kentucky*) Department Chair for Policy, Organization & Leadership. Associate Professor. Mentoring and leader development, workplace Incivility, workplace learning and development.

John M. Gould, PhD (*University of Pittsburgh*) Harrisburg EdD Educational Leadership & Change Program. Clinical Professor. Change leadership, curriculum re-design, the impact of technology on learning.

Dominic F. Gullo, PhD (*Indiana University*). Professor. Studying the relative and long-range effects of early schooling experiences in prekindergarten and kindergarten on children's achievement and social adaptation to school routine.

H. Bernard Hall, PhD (*Temple University*). Assistant Professor. Hip-hop Pedagogy, English Education, Urban Teacher Education.

Penny Hammrich, PhD (*University of Minnesota*) Dean. Distinguished University Professor. Urban education; science education; genetics; gender equity; science knowledge for conceptual teaching; sport science.

Paul Harrington, PhD (*University of Massachusetts, Boston*) Director, Center for Labor Markets and Policy. Professor. Teen and young adult job access; economic outlook, college labor market; workforce development, planning, and development; vocational rehabilitation and job market transition.

Michael J. Haslip, PhD (*Old Dominion University*). Assistant Professor. Early childhood education, social and emotional learning, child guidance strategies, effects of public pre-school attendance.

Deanna Hill, JD, PhD (*University of Pittsburgh*). Associate Clinical Professor. Higher education, international education, education law, education policy

Erin Horvat, PhD (*University of California, Los Angeles*) Senior Vice Provost for Faculty Affairs. Professor. Urban education, access and equity, high school dropout, parent involvement/family involvement, community engagement in research.

Jennifer Katz-Buonincontro, PhD (*University of Oregon*) Associate Dean of Research. Associate Professor. Educational administration, leadership development, survey & instrument design.

Larry Keiser, PhD (*Drexel University*). Assistant Clinical Professor. Education and corporate/business leaders' creativity and entrepreneurial mindsets; creative school/work environments; neuroscience of creativity; everyday creativity for teachers and educators.

Kristine Kelly, PhD (*University of Wisconsin, Madison*). Associate Clinical Professor. Sociology of gender and development; anthropology of policy; comparative and international education; qualitative research methods; Vietnam and Southeast Asia.

Cameron Kiosoglous, PhD (*Virginia Tech University*) Program Director. Assistant Clinical Professor. Coached on the USRowing National Team staff since 2002, including the 2004, 2008, 2012, and 2016 Olympic Games; coaching development; measuring coaching quality; self-insight and reflective practices; coaching leadership; conference presenter; published author.

Valerie Klein, PhD (*Amherst College*). Associate Clinical Professor. Mathematics learning and teaching; teacher's use of formative

assessment in mathematics; creating opportunities for rich problem solving in the classroom; examining teachers growth and change; qualitative research methods.

Michael G. Kozak, Ed.D. (*Rowan University*). Assistant Clinical Professor. Leadership, STEAM, online and blended learning environments, systems thinking, experiential learning, K-12 education, and facilitating change

Amanda Lannie, PhD (*Syracuse University*). Assistant Clinical Professor. Applied behavior analysis and special education; School-based consultation; system-wide interventions as a mechanism for delivery supports to all students; Designing effective and efficient interventions for students with emotional/behavioral disorders.

Vera Lee, EdD (*University of Pennsylvania*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Practitioner Research in online courses to explore inservice/preservice teachers' emerging understandings about issues of diversity; the development of information/digital literacies of urban youth; English language learners.

Bruce Levine, JD (*New York University*). Associate Clinical Professor. Educational policy, school law, public-private partnerships, intersection of business and education.

Kristine Lewis-Grant, PhD (*Temple University*). Clinical Professor. Experiences of students of African descent at predominantly white colleges and universities, college access and college student development, youth civic engagement in urban school reform, qualitative research and evaluation.

William Lynch, PhD (*University of Maryland*). Professor. Curriculum and educational leadership, educational technology, distance learning policy development, higher and adult education.

Constance Lyttle, PhD, JD (*University of Pittsburgh, Duquesne University*). Clinical Professor. Legal rights of gifted and talented children and children with disabilities; inclusive education of exceptional children; special education mediation; special education IEP/IFSP facilitation; resolution session facilitation

Joy Phillips, PhD (*The University of Texas at Austin*). Associate Clinical Professor. Visionary leadership in theory and practice, school reform as innovative problem-setting, thinking qualitatively about school reform. thinking about school reform by drawing, Educational Leadership Program Assessment.

Kathleen Provinzano, PhD (*Marywood University*). Assistant Professor. Educational administration.

Harriette Thurber Rasmussen, EdD (*Fielding Graduate Institute*). Assistant Clinical Professor. Educational leadership and change.

Lori Severino, EdD (*Neumann University*). Assistant Professor. Special education, differentiated instruction, reading, Wilson language, multi-sensory instruction, reading comprehension, assessment, adolescent literacy.

Jason Silverman, PhD (*Vanderbilt University*). Professor. Teaching and learning of advanced mathematical ideas (algebra and calculus); improving teachers' ability to orchestrate and sustain inquiry-based and discussion-based instruction; technology in mathematics education.

Joanne Sloand, EdD (*Duquesne University*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Special

Education Leadership, Trauma-informed care, Parent engagement in special education service delivery.

Toni A. Sondergeld, PhD (*University of Toledo*). Associate Professor. Cognitive and affective assessment development; program/grant evaluation; high stakes testing measurement; STEM education; urban education

Bridget Sweeney Blakely, PhD (*Temple University*). Assistant Clinical Professor. Consultation; Positive Behavior Interventions and Supports (PBIS); Response to Intervention (RtI); Systems-level change; performance feedback

Mary Jean Tecce DeCarlo, EdD (*University of Pennsylvania*). Associate Clinical Professor. Early literacy development, learning differences, knowledge construction, urban education.

Sarah P. Ulrich, EdD (*Saint Joseph's University*) *Associate Dean of Teacher Education and Undergraduate Affairs*. Clinical Professor. Cross-cultural, language and academic development, school reform, teacher preparation, teacher retention, teacher residencies in urban contexts.

Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) *Program Director, Applied Behavior Analysis and Special Education*. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Teacher Education: Chemistry

Major: Teacher Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 186.5

Co-op Options: One Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.1205

Standard Occupational Classification (SOC) code: 25-2031

About the Concentration

Certification is for grades 7-12

This certification option within the BS in Teacher Education (p. 28) emphasizes coursework in areas such as organic chemistry, physical chemistry, biochemistry, analytical chemistry, and inorganic chemistry. Candidates may work with their academic advisor to satisfy teacher certification requirements for multiple areas, if desired.

The program requires that candidates have a B average (3.0 GPA) in content courses needed for teacher certification in addition to the grade of B or better in each EDEX, EDLT, EDUC, and MTED courses throughout their time in the program. These requirements must be satisfied in order for Drexel to recommend the candidates for teacher certification upon graduation and/or be considered to have completed the program.

Candidates pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study through our DragonsTeach certification pathway. For more information, contact the program coordinator for the School of Education at 215-895-6770.

Additional Information

For more information about the program, visit the School of Education (<http://www.drexel.edu/soe/>) website.

Degree Requirements

General Education Requirements

CIVC 101	Introduction to Civic Engagement	1.0
COOP 101	Career Management and Professional Development	1.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
English elective course between 200-329		3.0
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 200	Multivariate Calculus	4.0
HIST 289	History of Science: Enlightenment to Modernity	4.0
PHIL 251	Ethics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
UNIV T101	The Drexel Experience	1.0

Science Requirements

BIO 107	Cells, Genetics & Physiology	3.0
BIO 108	Cells, Genetics and Physiology Laboratory	1.0
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
CHEM 103	General Chemistry III	5.0
CHEM 230	Quantitative Analysis	4.0
CHEM 231 [WI]	Quantitative Analysis Laboratory	2.0
CHEM 241	Organic Chemistry I	4.0
CHEM 242	Organic Chemistry II	4.0
CHEM 243	Organic Chemistry III	3.0
CHEM 244	Organic Chemistry Laboratory I	3.0
CHEM 245	Organic Chemistry Laboratory II	3.0
CHEM 253	Thermodynamics and Kinetics	4.0
CHEM 357 [WI]	Physical Chemistry Laboratory I	2.5

CHEM 420	Molecular Symmetry and Group Theory Applied Chemistry	3.0
CHEM 421	Inorganic Chemistry I	3.0
ENVS 401	Chemistry of the Environment	3.0
PHEV 145	Weather I: Climate and Global Change	4.0
PHYS 101	Fundamentals of Physics I	4.0
PHYS 102	Fundamentals of Physics II	4.0
PHYS 201	Fundamentals of Physics III	4.0

Pedagogy Requirements

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368	Literacy and Content Skill Development PK-12	3.0
or EDEX 366	Literacy and Content Skill Development 7-12	
EDLT 325	Design for Learning with Digital Media	3.0
EDLT 326	Technology Applications for Learning	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar (To be taken 3 times)	3.0
EDUC 113	Organizational Structure of Secondary Schools	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 315	Secondary Science Teaching Methods	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0

Student Teaching Experiences

EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching (Chemistry)	9.0

Total Credits

186.5

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 year, 1 co-op

First Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
CHEM 101	3.5 CHEM 102	4.5 CHEM 103	5.0 VACATION	
EDUC 101	3.0 CIVC 101	1.0 EDEX 142	3.0	
EDUC 105	1.0 EDUC 105	1.0 EDUC 105	1.0	
ENGL 101 or 111	3.0 EDUC 113	3.0 EDUC 123	3.0	
MATH 121	4.0 ENGL 102 or 112	3.0 ENGL 103 or 113	3.0	
PSY 101	3.0 MATH 122	4.0		
UNIV T101	1.0			
	18.5	16.5	15	0

Second Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 107	3.0 CHEM 231	2.0 CHEM 242	4.0 CHEM 243	3.0
BIO 108	1.0 CHEM 241	4.0 EDEX 366 or 368	3.0 EDLT 325	3.0
CHEM 230	4.0 EDUC 216	3.0 EDUC 305	1.0 EDUC 322	3.0
COOP 101	1.0 MATH 200	4.0 EDUC 308	3.0 PHEV 145	4.0
EDEX 344	3.0	PHYS 101	4.0 PHYS 102	4.0
EDUC 205	1.0			
EDUC 223	3.0			
EDUC 365	3.0			
	19	13	15	17

Third Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	CHEM 245	3.0 CHEM 253	4.0
EDUC 315	3.0 CHEM 244	3.0 EDLT 326	3.0 EDUC 312	3.0
		EDUC 316	3.0 EDUC 324	3.0
		PHYS 201	4.0 PHIL 251	3.0
		PSY 320	3.0	
	3	3	16	13

Fourth Year

Fall	Credits Winter	Credits Spring	Credits
CHEM 357	2.5 EDUC 410	9.0 CHEM 421	3.0
EDUC 409	9.0 CHEM 420	3.0 EDUC 405	1.0
ENGL 200 - ENGL 329	3.0	ENV5 401	3.0
		HIST 289	4.0
	14.5	12	11

Total Credits 186.5

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

Kristen Betts, EdD (*George Washington University*). Clinical Professor. Higher education administration and governance, online blended education, instructional design and educational technology, program assessment and evaluation.

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Aroutis N. Foster, PhD (*Michigan State University*) Associate Dean for Academic Affairs and Graduate Studies. Professor. Educational psychology and educational technology, especially the following: Motivation; Technological Pedagogical Content Knowledge (TPACK); Immersive Interactive Digital Environments (simulation, games, virtual realities).

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Michael J. Haslip, PhD (*Old Dominion University*). Assistant Professor. Early childhood education, social and emotional learning, child guidance strategies, effects of public pre-school attendance.

Deanna Hill, JD, PhD (*University of Pittsburgh*). Associate Clinical Professor. Higher education, international education, education law, education policy

Erin Horvat, PhD (*University of California, Los Angeles*) *Senior Vice Provost for Faculty Affairs*. Professor. Urban education, access and equity, high school dropout, parent involvement/family involvement, community engagement in research.

Jennifer Katz-Buonincontro, PhD (*University of Oregon*) *Associate Dean of Research*. Associate Professor. Educational administration, leadership development, survey & instrument design.

Larry Keiser, PhD (*Drexel University*). Assistant Clinical Professor. Education and corporate/business leaders' creativity and entrepreneurial mindsets; creative school/work environments; neuroscience of creativity; everyday creativity for teachers and educators.

Kristine Kelly, PhD (*University of Wisconsin, Madison*). Associate Clinical Professor. Sociology of gender and development; anthropology of policy; comparative and international education; qualitative research methods; Vietnam and Southeast Asia.

Cameron Kiosoglous, PhD (*Virginia Tech University*) *Program Director*. Assistant Clinical Professor. Coached on the USRowing National Team staff since 2002, including the 2004, 2008, 2012, and 2016 Olympic Games; coaching development; measuring coaching quality; self-insight and reflective practices; coaching leadership; conference presenter; published author.

Valerie Klein, PhD (*Amherst College*). Associate Clinical Professor. Mathematics learning and teaching; teacher's use of formative assessment in mathematics; creating opportunities for rich problem solving in the classroom; examining teachers growth and change; qualitative research methods.

Michael G. Kozak, Ed.D. (*Rowan University*). Assistant Clinical Professor. Leadership, STEAM, online and blended learning environments, systems thinking, experiential learning, K-12 education, and facilitating change

Amanda Lannie, PhD (*Syracuse University*). Assistant Clinical Professor. Applied behavior analysis and special education; School-based consultation; system-wide interventions as a mechanism for delivery supports to all students; Designing effective and efficient interventions for students with emotional/behavioral disorders.

Vera Lee, EdD (*University of Pennsylvania*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Practitioner Research in online courses to explore inservice/preservice teachers' emerging understandings about issues of diversity; the

development of information/digital literacies of urban youth; English language learners.

Bruce Levine, JD (*New York University*). Associate Clinical Professor. Educational policy, school law, public-private partnerships, intersection of business and education.

Kristine Lewis-Grant, PhD (*Temple University*). Clinical Professor. Experiences of students of African descent at predominantly white colleges and universities, college access and college student development, youth civic engagement in urban school reform, qualitative research and evaluation.

William Lynch, PhD (*University of Maryland*). Professor. Curriculum and educational leadership, educational technology, distance learning policy development, higher and adult education.

Constance Lyttle, PhD, JD (*University of Pittsburgh, Duquesne University*). Clinical Professor. Legal rights of gifted and talented children and children with disabilities; inclusive education of exceptional children; special education mediation; special education IEP/IFSP facilitation; resolution session facilitation

Joy Phillips, PhD (*The University of Texas at Austin*). Associate Clinical Professor. Visionary leadership in theory and practice, school reform as innovative problem-setting, thinking qualitatively about school reform. thinking about school reform by drawing, Educational Leadership Program Assessment.

Kathleen Provinzano, PhD (*Marywood University*). Assistant Professor. Educational administration.

Harriette Thurber Rasmussen, EdD (*Fielding Graduate Institute*). Assistant Clinical Professor. Educational leadership and change.

Lori Severino, EdD (*Neumann University*). Assistant Professor. Special education, differentiated instruction, reading, Wilson language, multi-sensory instruction, reading comprehension, assessment, adolescent literacy.

Jason Silverman, PhD (*Vanderbilt University*). Professor. Teaching and learning of advanced mathematical ideas (algebra and calculus); improving teachers' ability to orchestrate and sustain inquiry-based and discussion-based instruction; technology in mathematics education.

Joanne Sloand, EdD (*Duquesne University*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Special Education Leadership, Trauma-informed care, Parent engagement in special education service delivery.

Toni A. Sondergeld, PhD (*University of Toledo*). Associate Professor. Cognitive and affective assessment development; program/grant evaluation; high stakes testing measurement; STEM education; urban education

Bridget Sweeney Blakely, PhD (*Temple University*). Assistant Clinical Professor. Consultation; Positive Behavior Interventions and Supports (PBIS); Response to Intervention (RtI); Systems-level change; performance feedback

Mary Jean Tecce DeCarlo, EdD (*University of Pennsylvania*). Associate Clinical Professor. Early literacy development, learning differences, knowledge construction, urban education.

Sarah P. Ulrich, EdD (*Saint Joseph's University*) *Associate Dean of Teacher Education and Undergraduate Affairs*. Clinical Professor. Cross-

cultural, language and academic development, school reform, teacher preparation, teacher retention, teacher residencies in urban contexts.

Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) Program Director, *Applied Behavior Analysis and Special Education*. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) School of Education, *Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Teacher Education: English

Major: Teacher Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 181.0

Co-op Options: One Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.1205

Standard Occupational Classification (SOC) code: 25-2031

About the Concentration

Certification is for grades 7-12

This certification option within the BS in Teacher Education (p. 28) emphasizes coursework in areas such as literature and writing, young adult fiction, and techniques for effectively teaching reading and writing skills. Candidates may work with their academic advisor to satisfy teacher certification requirements for multiple areas, if desired.

The program requires that candidates have a B average (3.0 GPA) in content courses needed for teacher certification in addition to the grade of B or better in each EDEX, EDLT, EDUC, and MTED courses throughout their time in the program. These requirements must be satisfied in order for Drexel to recommend the candidates for teacher certification upon graduation and/or be considered to have completed the program.

Candidates pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study through our DragonsTeach certification pathway. For more

information, contact the program coordinator for the School of Education at 215-895-6770.

Additional Information

For more information about the program, visit the School of Education (<http://www.drexel.edu/soe/>) website.

Degree Requirements

General Education Requirements

ARTH 101	History of Art I	3.0
CIVC 101	Introduction to Civic Engagement	1.0
COOP 101	Career Management and Professional Development	1.0
COM 230	Techniques of Speaking	3.0
ECON 201	Principles of Microeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
ENVS 260	Environmental Science and Society	3.0
Select one American History course:		4.0
HIST 201	United States History to 1815	
HIST 202	United States History, 1815-1900	
HIST 203	United States History since 1900	
INFO 101	Introduction to Computing and Security Technology	3.0
LING 101	Introduction to Linguistics	3.0
MATH 171	Introduction to Analysis A	3.0
MATH 172	Introduction to Analysis B	3.0
MATH 173	Introduction to Analysis C	3.0
or MATH 107	Probability and Statistics for Liberal Arts	
MUSC 130	Introduction to Music	3.0
NFS 100	Nutrition, Foods, and Health	2.0
NFS 101	Introduction to Nutrition & Food	1.0
PHYS 131	Survey of the Universe	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
SOC 335	Sociology of Education	3.0
WRIT 225 [WI]	Creative Writing	3.0
WRIT 301 [WI]	Writing Poetry	3.0
UNIV T101	The Drexel Experience	1.0

Science Sequence

Select one of the following:

CHEM 111	General Chemistry I	
CHEM 112	General Chemistry II	
or		
PHYS 103	General Physics I	
PHYS 104	General Physics II	

English Requirements (option to minor in English)

ENGL 200 [WI]	Classical to Medieval Literature	3.0
ENGL 201	Renaissance to the Enlightenment	3.0
ENGL 204	Post-Colonial Literature	3.0
ENGL 205 [WI]	American Literature I	3.0
ENGL 206 [WI]	American Literature II	3.0
ENGL 211 [WI]	British Literature I	3.0
ENGL 212	British Literature II	3.0
ENGL 304	Young Adult Fiction	3.0
ENGL 325	Topics in World Literature	3.0
ENGL 335	Mythology	3.0
ENGL 355 [WI]	Women and Literature	3.0

Pedagogy Requirements

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368 or EDEX 366	Literacy and Content Skill Development PK-12 Literacy and Content Skill Development 7-12	3.0
EDLT 325	Design for Learning with Digital Media	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar (To be taken 3 times)	3.0
EDUC 113	Organizational Structure of Secondary Schools	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 358	English Teaching Methods	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0
Student Teaching Experiences		
EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0
Total Credits		181.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 year, 1 co-op

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
CHEM 111 or PHYS 103	4.0 ARTH 101	3.0 EDEX 142	3.0 VACATION	
EDUC 101	3.0 CHEM 112 or PHYS 104	4.0 EDUC 105	1.0	

EDUC 105	1.0 CIVC 101	1.0 EDUC 123	3.0
ENGL 101 or 111	3.0 EDUC 105	1.0 ENGL 103 or 113	3.0
MATH 171	3.0 EDUC 113	3.0 MATH 173	3.0
PSY 101	3.0 ENGL 102 or 112	3.0 PHYS 131	3.0
UNIV T101	1.0 MATH 172	3.0	
18		18	16

Second Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP 101	1.0 EDUC 216	3.0 COM 230	3.0 ECON 201	4.0
EDEX 344	3.0 ENGL 201	3.0 EDEX 366 or 368	3.0 EDLT 325	3.0
ENGL 200	3.0 INFO 101	3.0 EDUC 308	3.0 EDUC 322	3.0
EDUC 205	1.0 LING 101	3.0 EDUC 305	1.0 HIST 201, 202, or 203	4.0
EDUC 223	3.0 NFS 100 & NFS 101	3.0 ENVS 260	3.0	
EDUC 365	3.0 WRIT 301	3.0		
WRIT 225	3.0			
17		18	13	14

Third Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	EDUC 316	3.0 EDUC 312	3.0
EDUC 358	3.0 ENGL 211	3.0 ENGL 304 PSY 320 SOC 335	3.0 EDUC 324 3.0 ENGL 212 3.0 ENGL 335	3.0 3.0 3.0
3		3	12	12

Fourth Year

Fall	Credits Winter	Credits Spring	Credits
EDUC 409	9.0 EDUC 410	9.0 EDUC 405	1.0
ENGL 204	3.0 ENGL 335	3.0 ENGL 205 ENGL 206 ENGL 325 MUSC 130	3.0 3.0 3.0 3.0
12		12	13

Total Credits 181

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

Ayana Allen, PhD (*Texas A&M University*). Associate Professor. Urban education; Identity construction in school contexts; Urban school transformation.

Kristen Betts, EdD (*George Washington University*). Clinical Professor. Higher education administration and governance, online blended education, instructional design and educational technology, program assessment and evaluation.

Eric Brewe, PhD (*Arizona State University*). Associate Professor. Physics Education Research, introductory course reform, network analysis in learning, neuromechanisms of learning.

Stephanie Smith Budhai, PhD (*Drexel University*). Associate Clinical Professor. Teacher and higher education, culturally responsive teaching, equity and social justice, online learning, community engagement and service-learning, family involvement and partnerships, and learning technologies.

José Luis Chávez, EdD (*University of Southern California*). Clinical Professor. Higher education leadership and administration.

Rebecca Clothey, PhD (*University of Pittsburgh*) *Associate Department Head*. Associate Professor. Comparative and international education, education of ethnic and linguistic minorities, sociology of education.

James Connell, PhD (*Louisiana State University*) *Founding Clinical Core Director and Research Fellow, A.J. Drexel Autism Institute*. Associate Professor. Identifying the variables that influence adult behavior change in community settings; autism intervention; widespread dissemination of evidence-based interventions in school and community settings.

Sandra L. Dika, PhD (*Virginia Tech University*). Associate Professor. Educational research and evaluation.

Kareem Edouard, PhD (*Stanford University*). Assistant Professor. Educational technology; internet-based STEM learning; equity and inclusion in STEM education

Salvatore V. Falletta, EdD (*North Carolina State University*). Clinical Professor. Human Resource intelligence (i.e., HR research and analytics practices); HRD assessment, measurement, and evaluation models and taxonomies; organizational diagnostic models; web-based employee and organizational survey methods, and computational modeling.

Alonzo M. Flowers, III, PhD (*Texas A&M University*). Associate Professor. Education issues including academic identity development of men of color in STEM education, diversity in teaching & learning, research methods/design, and college student development in higher education

Aroutis N. Foster, PhD (*Michigan State University*) *Associate Dean for Academic Affairs and Graduate Studies*. Professor. Educational psychology and educational technology, especially the following: Motivation; Technological Pedagogical Content Knowledge (TPACK); Immersive Interactive Digital Environments (simulation, games, virtual realities).

Rajashi Ghosh, PhD (*University of Louisville, Kentucky*) *Department Chair for Policy, Organization & Leadership*. Associate Professor. Mentoring and leader development, workplace Incivility, workplace learning and development.

John M. Gould, PhD (*University of Pittsburgh*) *Harrisburg EdD Educational Leadership & Change Program*. Clinical Professor. Change leadership, curriculum re-design, the impact of technology on learning.

Dominic F. Gullo, PhD (*Indiana University*). Professor. Studying the relative and long-range effects of early schooling experiences in prekindergarten and kindergarten on children's achievement and social adaptation to school routine.

H. Bernard Hall, PhD (*Temple University*). Assistant Professor. Hip-hop Pedagogy, English Education, Urban Teacher Education.

Penny Hammrich, PhD (*University of Minnesota*) *Dean*. Distinguished University Professor. Urban education; science education; genetics; gender equity; science knowledge for conceptual teaching; sport science.

Paul Harrington, PhD (*University of Massachusetts, Boston*) *Director, Center for Labor Markets and Policy*. Professor. Teen and young adult job access; economic outlook, college labor market; workforce development, planning, and development; vocational rehabilitation and job market transition.

Michael J. Haslip, PhD (*Old Dominion University*). Assistant Professor. Early childhood education, social and emotional learning, child guidance strategies, effects of public pre-school attendance.

Deanna Hill, JD, PhD (*University of Pittsburgh*). Associate Clinical Professor. Higher education, international education, education law, education policy

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Toni A. Sondergeld, PhD (*University of Toledo*). Associate Professor. Cognitive and affective assessment development; program/grant evaluation; high stakes testing measurement; STEM education; urban education

Bridget Sweeney Blakely, PhD (*Temple University*). Assistant Clinical Professor. Consultation; Positive Behavior Interventions and Supports (PBIS); Response to Intervention (RtI); Systems-level change; performance feedback

Mary Jean Tecce DeCarlo, EdD (*University of Pennsylvania*). Associate Clinical Professor. Early literacy development, learning differences, knowledge construction, urban education.

Sarah P. Ulrich, EdD (*Saint Joseph's University*) *Associate Dean of Teacher Education and Undergraduate Affairs*. Clinical Professor. Cross-cultural, language and academic development, school reform, teacher preparation, teacher retention, teacher residencies in urban contexts.

Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) *Program Director, Applied Behavior Analysis and Special Education*. Clinical Professor.

Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Teacher Education: General Science

Major: Teacher Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 182.0

Co-op Options:

Classification of Instructional Programs (CIP) code: 13.1205

Standard Occupational Classification (SOC) code: 25-2031

About the Concentration

Certification is for grades 7-12

This certification option within the BS in Teacher Education (p. 28) is a well-rounded program incorporating biology, chemistry, mathematics, and physics. Candidates may work with their academic advisor to satisfy teacher certification requirements for multiple areas, if desired.

The program requires that candidates have a B average (3.0 GPA) in content courses needed for teacher certification in addition to the grade of B or better in each EDEX, EDLT, EDUC, and MTED courses throughout their time in the program. These requirements must be satisfied in order for Drexel to recommend the candidates for teacher certification upon graduation and/or be considered to have completed the program.

Candidates pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study through our DragonsTeach certification pathway. For more information, contact the program coordinator for the School of Education at 215-895-6770.

Additional Information

For more information about the program, visit the School of Education (<http://www.drexel.edu/soe/>) website.

Degree Requirements

General Education Requirements

CIVC 101	Introduction to Civic Engagement	1.0
COOP 101	Career Management and Professional Development	1.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
English (ENGL) course between 200-329		3.0
HIST 283	Technology and Identity	4.0
HIST 285	Technology in Historical Perspective	4.0
HIST 289	History of Science: Enlightenment to Modernity	4.0
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
PHIL 251	Ethics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
UNIV T101	The Drexel Experience	1.0
Free Electives		6.0

Science Requirements

BIO 107	Cells, Genetics & Physiology	3.0
BIO 108	Cells, Genetics and Physiology Laboratory	1.0
BIO 109	Biological Diversity, Ecology & Evolution	3.0
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	1.0
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
CHEM 103	General Chemistry III	5.0
ENVS 284	Physiological and Population Ecology	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
GEO 101	Physical Geology	4.0
GEO 102	History of the Earth	4.0
GEO 207	Introduction to Oceanography	3.0
PHEV 145	Weather I: Climate and Global Change	4.0
PHYS 101	Fundamentals of Physics I	4.0
PHYS 102	Fundamentals of Physics II	4.0
PHYS 131	Survey of the Universe	3.0

Pedagogy Requirements

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368	Literacy and Content Skill Development PK-12	3.0
or EDEX 366	Literacy and Content Skill Development 7-12	
EDLT 325	Design for Learning with Digital Media	3.0
EDLT 326	Technology Applications for Learning	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar (To be taken 3 times)	3.0
EDUC 113	Organizational Structure of Secondary Schools	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 308	Creating a Positive Classroom Climate	3.0

EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 315	Secondary Science Teaching Methods	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0

Student Teaching Experiences

EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0

Total Credits **182.0**

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 year, 1 co-op

First Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BIO 107	3.0 BIO 109	3.0 EDEX 142	3.0 VACATION	
BIO 108	1.0 BIO 110	1.0 EDUC 105	1.0	
EDUC 101	3.0 CIVC 101	1.0 EDUC 123	3.0	
EDUC 105	1.0 EDUC 105	1.0 ENGL 103 or 113	3.0	
ENGL 101 or 111	3.0 EDUC 113	3.0 GEO 101	4.0	
MATH 121	4.0 ENGL 102 or 112	3.0 MATH 123	4.0	
UNIV T101	1.0 MATH 122	4.0		
			18	0
		16	16	0

Second Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
CHEM 101	3.5 CHEM 102	4.5 CHEM 103	5.0 EDLT 325	3.0
COOP 101	1.0 EDUC 216	3.0 EDEX 366 or 368	3.0 EDUC 322	3.0
EDEX 344	3.0 ENVS 286	3.0 EDUC 305	1.0 PHIL 251	3.0
EDUC 205	1.0 GEO 102	4.0 EDUC 308	3.0 PHYS 131	3.0
EDUC 223	3.0 HIST 283	4.0 PSY 101	3.0	
EDUC 365	3.0			
ENVS 284	3.0			
		17.5	15	12
		18.5	15	12

Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	EDLT 326	3.0 EDUC 312	3.0
EDUC 315	3.0	EDUC 316	3.0 EDUC 324	3.0
		PSY 320	3.0 HIST 285	4.0
		PHYS 101	4.0 PHYS 102	4.0
	3	0	13	14
Fourth Year				
Fall	Credits Winter	Credits Spring	Credits	
EDUC 409	9.0 EDUC 410	9.0 EDUC 405	1.0	
Free elective	3.0 Free elective	3.0 ENGL 200 - ENGL 329	3.0	
		GEO 207	3.0	
		HIST 289	4.0	
		PHEV 145	4.0	
	12	12	15	
Total Credits 182				

* Students must take ENVS 286 no later than Third Year, Winter term. Course is offered every other year.

Education Faculty

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communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) School of Education, Founder, Drexel School of Education. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Teacher Education: Mathematics

Major: Teacher Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 185.0

Co-op Options: One Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.1205

Standard Occupational Classification (SOC) code: 25-2031

About the Concentration

Certification is for grades 7-12

This certification option within the BS in Teacher Education (p. 28) emphasizes coursework in areas of mathematics such as calculus, linear algebra, differential equations, probability and statistics, techniques of mathematical proof, and discrete mathematics. Candidates may work with their academic advisor to satisfy teacher certification requirements for multiple areas, if desired.

The program requires that candidates have a B average (3.0 GPA) in content courses needed for teacher certification in addition to the grade of B or better in each EDEX, EDLT, EDUC, and MTED courses throughout their time in the program. These requirements must be satisfied in order for Drexel to recommend the candidates for teacher certification upon graduation and/or be considered to have completed the program.

Candidates pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study through our DragonsTeach certification pathway. For more information, contact the program coordinator for the School of Education at 215-895-6770.

Additional Information

For more information about the program, visit the School of Education (<http://www.drexel.edu/soe/>) website.

Degree Requirements

General Education Requirements

CIVC 101	Introduction to Civic Engagement	1.0
COOP 101	Career Management and Professional Development	1.0
CS 150	Computer Science Principles	3.0
ECON 201	Principles of Microeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	

English elective course between 200-329		3.0
HIST 289	History of Science: Enlightenment to Modernity	4.0
PHIL 251	Ethics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
UNIV T101	The Drexel Experience	1.0

Mathematics Requirements

MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	4.0
MATH 205	Survey of Geometry	3.0
MATH 210	Differential Equations	4.0
MATH 220 [WI]	Introduction to Mathematical Reasoning	3.0
MATH 221	Discrete Mathematics	3.0
MATH 311	Probability and Statistics I	4.0
MATH 312	Probability and Statistics II	4.0
MATH 331	Abstract Algebra I	4.0

Science Requirements

BIO 107	Cells, Genetics & Physiology	3.0
BIO 108	Cells, Genetics and Physiology Laboratory	1.0
BIO 109	Biological Diversity, Ecology & Evolution	3.0
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	1.0
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
ENVS 260	Environmental Science and Society	3.0
PHYS 101	Fundamentals of Physics I	4.0
PHYS 102	Fundamentals of Physics II	4.0

Pedagogy Requirements

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368	Literacy and Content Skill Development PK-12	3.0
or EDEX 366	Literacy and Content Skill Development 7-12	
EDLT 325	Design for Learning with Digital Media	3.0
EDLT 326	Technology Applications for Learning	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar (To be taken 3 times)	3.0
EDUC 113	Organizational Structure of Secondary Schools	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0
MTED 419	Teaching Secondary Mathematics	3.0
MTED 428	Cultural and Historical Significance of Mathematics	3.0

Student Teaching Experience

EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0

Total Credits 185.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Sample Plan of Study

4 year, 1 co-op

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDUC 101	3.0 CIVC 101	1.0 BIO 107	3.0 VACATION	
EDUC 105	1.0 EDUC 105	1.0 BIO 108	1.0	
ENGL 101 or 111	3.0 EDUC 113	3.0 EDEX 142	3.0	
MATH 121	4.0 ENGL 102 or 112	3.0 EDUC 105	1.0	
PSY 101	3.0 MATH 122	4.0 EDUC 123	3.0	
UNIV 101	1.0 PHIL 251	3.0 ENGL 103 or 113 MATH 123	3.0 4.0	
	15	15	18	0
Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP 101	1.0 ECON 201	4.0 CHEM 101	3.5 BIO 109	3.0
EDEX 344	3.0 EDUC 216	3.0 EDEX 366 or 368	3.0 BIO 110	1.0
EDUC 205	1.0 INFO 108 or CS 150	3.0 EDUC 305	1.0 CHEM 102	4.5
EDUC 223	3.0 MATH 201	4.0 EDUC 308	3.0 EDLT 325	3.0
EDUC 365	3.0	MATH 205	3.0 EDUC 322	3.0
HIST 289	4.0	MATH 210	4.0 MTED 428	3.0
MATH 200	4.0			
	19	14	17.5	17.5
Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	EDLT 326	3.0 EDUC 312	3.0
MTED 419	3.0	EDUC 316	3.0 EDUC 324	3.0
		MATH 220	3.0 MATH 221	3.0
		PHYS 101	4.0 PHYS 102	4.0
	3	0	13	13
Fourth Year				
Fall	Credits Winter	Credits Spring	Credits	
EDUC 409	9.0 EDUC 410	9.0 EDUC 405	1.0	

MATH 331	4.0 MATH 311	4.0 ENGL 200 - ENGL 395	3.0
		ENVS 260	3.0
		MATH 312	4.0
		PSY 320	3.0
	13	13	14

Total Credits 185

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Teacher Education: Physics

Major: Teacher Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 188.0

Co-op Options: One Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.1205

Standard Occupational Classification (SOC) code: 25-2031

About the Concentration

Certification is for grades 7-12

This certification option within the BS in Teacher Education (p. 28) emphasizes coursework in physics and atmospheric science, including topics such as classical mechanics, electromagnetic fields, quantum mechanics, physics of high fidelity, and survey of the universe. Candidates may work with their academic advisor to satisfy teacher certification requirements for multiple areas, if desired.

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or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
	English elective course between 200-329	3.0
HIST 289	History of Science: Enlightenment to Modernity	4.0
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	4.0
MATH 210	Differential Equations	4.0
PHIL 251	Ethics	3.0
PSY 101	General Psychology I	3.0
PSY 320 [WI]	Educational Psychology	3.0
UNIV T101	The Drexel Experience	1.0

Science Requirements

BIO 107	Cells, Genetics & Physiology	3.0
BIO 108	Cells, Genetics and Physiology Laboratory	1.0
BIO 109	Biological Diversity, Ecology & Evolution	3.0
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	1.0
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5

ENVS 260	Environmental Science and Society	3.0
PHEV 145	Weather I: Climate and Global Change	4.0
PHYS 113	Contemporary Physics I	5.0
PHYS 114	Contemporary Physics II	5.0
PHYS 115	Contemporary Physics III	5.0
PHYS 131	Survey of the Universe	3.0
PHYS 201	Fundamentals of Physics III	4.0
PHYS 217	Thermodynamics	4.0
PHYS 311	Classical Mechanics I	4.0
PHYS 321	Electromagnetic Fields I	4.0
PHYS 326	Quantum Mechanics I	4.0
Pedagogy Requirements		
EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368	Literacy and Content Skill Development PK-12	3.0
or EDEX 366	Literacy and Content Skill Development 7-12	
EDLT 325	Design for Learning with Digital Media	3.0
EDLT 326	Technology Applications for Learning	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar (To be taken 3 times)	3.0
EDUC 113	Organizational Structure of Secondary Schools	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 315	Secondary Science Teaching Methods	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0
Student Teaching Experiences		
EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0
Total Credits		188.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

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with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Physics Concentration: Plan of Study

4 year, 1 co-op

First Year							
Fall	Credits	Winter	Credits	Spring	Credits	Summer	Credits
BIO 107	3.0	BIO 109	3.0	EDEX 142	3.0	VACATION	
BIO 108	1.0	BIO 110	1.0	EDUC 105	3.0		
EDUC 101	3.0	CIVC 101	1.0	EDUC 123	3.0		
EDUC 105	1.0	ENGL 102 or 112	3.0	ENGL 103 or 113	3.0		
ENGL 101 or 111	3.0	EDUC 105	1.0	MATH 123	4.0		
MATH 121	4.0	EDUC 113	3.0	PHIL 251	3.0		
UNIV 101	1.0	MATH 122	4.0				
	16		16		17		0
Second Year							
Fall	Credits	Winter	Credits	Spring	Credits	Summer	Credits
CHEM 101	3.5	CHEM 102	4.5	EDEX 366 or 368	3.0	EDLT 325	3.0
COOP 101	1.0	EDUC 216	3.0	EDUC 305	1.0	EDUC 322	3.0
EDEX 344	3.0	MATH 200	4.0	EDUC 308	3.0	ENVS 260	3.0
EDUC 205	1.0	PHYS 114	5.0	PHYS 115	5.0	HIST 289	4.0
EDUC 223	3.0			PSY 101	3.0		
EDUC 365	3.0						
PHYS 113	5.0						
	19.5		16.5		15		13
Third Year							
Fall	Credits	Winter	Credits	Spring	Credits	Summer	Credits
COOP EXPERIENCE		COOP EXPERIENCE		EDLT 326	3.0	EDUC 312	3.0
EDUC 315	3.0			EDUC 316	3.0	EDUC 324	3.0
				MATH 201	4.0	MATH 210	4.0
				PSY 320	3.0	PHYS 131	3.0
	3		0		13		13
Fourth Year							
Fall	Credits	Winter	Credits	Spring	Credits	Summer	Credits
EDUC 409	9.0	EDUC 410	9.0	EDUC 405	1.0		
PHYS 217	4.0	PHYS 311	4.0	ENGL 200 - ENGL 329	3.0		
PHYS 321	4.0			PHEV 145	4.0		
				PHYS 326	4.0		
				PHYS 201	4.0		
	17		13		16		
Total Credits 188							

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

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Aroutis N. Foster, PhD (*Michigan State University*) *Associate Dean for Academic Affairs and Graduate Studies*. Professor. Educational psychology and educational technology, especially the following: Motivation; Technological Pedagogical Content Knowledge (TPACK); Immersive Interactive Digital Environments (simulation, games, virtual realities).

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Kristine Kelly, PhD (*University of Wisconsin, Madison*). Associate Clinical Professor. Sociology of gender and development; anthropology of policy; comparative and international education; qualitative research methods; Vietnam and Southeast Asia.

Cameron Kiosoglous, PhD (*Virginia Tech University*) *Program Director*. Assistant Clinical Professor. Coached on the USRowing National Team staff since 2002, including the 2004, 2008, 2012, and 2016 Olympic Games; coaching development; measuring coaching quality; self-insight and reflective practices; coaching leadership; conference presenter; published author.

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Amanda Lannie, PhD (*Syracuse University*). Assistant Clinical Professor. Applied behavior analysis and special education; School-based consultation; system-wide interventions as a mechanism for delivery supports to all students; Designing effective and efficient interventions for students with emotional/behavioral disorders.

Vera Lee, EdD (*University of Pennsylvania*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Practitioner Research in online courses to explore inservice/preservice teachers' emerging understandings about issues of diversity; the

development of information/digital literacies of urban youth; English language learners.

Bruce Levine, JD (*New York University*). Associate Clinical Professor. Educational policy, school law, public-private partnerships, intersection of business and education.

Kristine Lewis-Grant, PhD (*Temple University*). Clinical Professor. Experiences of students of African descent at predominantly white colleges and universities, college access and college student development, youth civic engagement in urban school reform, qualitative research and evaluation.

William Lynch, PhD (*University of Maryland*). Professor. Curriculum and educational leadership, educational technology, distance learning policy development, higher and adult education.

Constance Lyttle, PhD, JD (*University of Pittsburgh, Duquesne University*). Clinical Professor. Legal rights of gifted and talented children and children with disabilities; inclusive education of exceptional children; special education mediation; special education IEP/IFSP facilitation; resolution session facilitation

Joy Phillips, PhD (*The University of Texas at Austin*). Associate Clinical Professor. Visionary leadership in theory and practice, school reform as innovative problem-setting, thinking qualitatively about school reform. Thinking about school reform by drawing, Educational Leadership Program Assessment.

Kathleen Provinzano, PhD (*Marywood University*). Assistant Professor. Educational administration.

Harriette Thurber Rasmussen, EdD (*Fielding Graduate Institute*). Assistant Clinical Professor. Educational leadership and change.

Lori Severino, EdD (*Neumann University*). Assistant Professor. Special education, differentiated instruction, reading, Wilson language, multi-sensory instruction, reading comprehension, assessment, adolescent literacy.

Jason Silverman, PhD (*Vanderbilt University*). Professor. Teaching and learning of advanced mathematical ideas (algebra and calculus); improving teachers' ability to orchestrate and sustain inquiry-based and discussion-based instruction; technology in mathematics education.

Joanne Sloand, EdD (*Duquesne University*) *Department Chair for Teaching, Learning & Curriculum*. Associate Clinical Professor. Special Education Leadership, Trauma-informed care, Parent engagement in special education service delivery.

Toni A. Sondergeld, PhD (*University of Toledo*). Associate Professor. Cognitive and affective assessment development; program/grant evaluation; high stakes testing measurement; STEM education; urban education

Bridget Sweeney Blakely, PhD (*Temple University*). Assistant Clinical Professor. Consultation; Positive Behavior Interventions and Supports (PBIS); Response to Intervention (RtI); Systems-level change; performance feedback

Mary Jean Tecce DeCarlo, EdD (*University of Pennsylvania*). Associate Clinical Professor. Early literacy development, learning differences, knowledge construction, urban education.

Sarah P. Ulrich, EdD (*Saint Joseph's University*) *Associate Dean of Teacher Education and Undergraduate Affairs*. Clinical Professor. Cross-

cultural, language and academic development, school reform, teacher preparation, teacher retention, teacher residencies in urban contexts.

Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) *Program Director, Applied Behavior Analysis and Special Education*. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Teacher Education: Social Studies

Major: Teacher Education

Degree Awarded: Bachelor of Science (BS)

Calendar Type: Quarter

Total Credit Hours: 187.0

Co-op Options: One Co-op (Four years)

Classification of Instructional Programs (CIP) code: 13.1205

Standard Occupational Classification (SOC) code: 25-2031

About the Concentration

Certification is for grades 7-12

This certification option within the BS in Teacher Education (p. 28) is designed to prepare candidates to teach social studies using appropriate pedagogy strategies. Topics include history, geography, civics, economics, and psychology. Candidates may work with their academic advisor to satisfy teacher certification requirements for multiple areas, if desired.

The program requires that candidates have a B average (3.0 GPA) in content courses needed for teacher certification in addition to the grade of B or better in each EDEX, EDLT, EDUC, and MTED courses throughout their time in the program. These requirements must be satisfied in order for Drexel to recommend the candidates for teacher certification upon graduation and/or be considered to have completed the program.

Candidates pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their

area of study through our DragonsTeach certification pathway. For more information, contact the program coordinator for the School of Education at 215-895-6770.

Additional Information

For more information about the program, visit the School of Education (<https://drexel.edu/soe/>) website.

Degree Requirements

General Education Requirements

ANTH 101	Introduction to Cultural Diversity	3.0
ANTH 110	Human Past: Anthropology and Prehistoric Archeology	3.0
CIVC 101	Introduction to Civic Engagement	1.0
COOP 101	Career Management and Professional Development	1.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
ENGL 205 [WI]	American Literature I	3.0
MATH 171	Introduction to Analysis A	3.0
MATH 172	Introduction to Analysis B	3.0
MATH 173	Introduction to Analysis C	3.0
or MATH 107	Probability and Statistics for Liberal Arts	
PSY 101	General Psychology I	3.0
PSY 150	Introduction to Social Psychology	3.0
PSY 320 [WI]	Educational Psychology	3.0
SOC 101	Introduction to Sociology	3.0
SOC 210	Race, Ethnicity and Social Inequality	4.0
SOC 335	Sociology of Education	3.0
UNIV T101	The Drexel Experience	1.0

Social Studies Content Requirements:

Select two:		8.0
HIST 161	Themes in World Civilization I	
HIST 162	Themes in World Civilization II	
HIST 163	Themes in World Civilization III	
HIST 201	United States History to 1815	4.0
HIST 202	United States History, 1815-1900	4.0
HIST 203	United States History since 1900	4.0
HIST 212	Themes in African-American History	4.0
HIST 214	United States Civil Rights Movement	4.0
HIST 275	History of Pennsylvania	3.0
PSCI 110	American Government	4.0
PSCI 140	Comparative Politics I	4.0
PSCI 150	International Politics	4.0
PSCI 220	Constitutional Law I	4.0
PSCI 240	Comparative Politics II	4.0
PSCI 375	Politics of Immigration	4.0

Pedagogy Requirements

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 344	Inclusionary Practices for Exceptional Students	3.0
EDEX 368	Literacy and Content Skill Development PK-12	3.0
or EDEX 366	Literacy and Content Skill Development 7-12	
EDLT 325	Design for Learning with Digital Media	3.0
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
EDUC 105	Freshman Pedagogy Seminar (To be taken 3 times)	3.0

EDUC 112	Integrative Instruction: Focus on World Geography	3.0
EDUC 113	Organizational Structure of Secondary Schools	3.0
EDUC 123	Adolescent Development	3.0
EDUC 205	Sophomore Pedagogy Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 223	Teaching the Middle School Child	3.0
EDUC 305 [WI]	Junior Pedagogy Seminar	1.0
EDUC 308	Creating a Positive Classroom Climate	3.0
EDUC 312	Educational Policy, Law & Advocacy	3.0
EDUC 316	Teaching in Urban Contexts	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 356	Secondary Social Studies Methods	3.0
EDUC 365	Foundations in Instructing English Language Learners	3.0
EDUC 405	Senior Pedagogy Seminar	1.0

Student Teaching Experience

EDUC 409	Student Teaching Seminar I	9.0
EDUC 410 [WI]	DragonsTeach Student Teaching	9.0

Total Credits

187.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

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Sample Plan of Study

4 year, 1 co-op

First Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
EDUC 101	3.0 ANTH 101	3.0 ANTH 110	3.0 VACATION	
EDUC 105	1.0 CIVC 101	1.0 EDEX 142	3.0	
ENGL 101 or 111	3.0 EDUC 105	1.0 EDUC 105	1.0	
MATH 171	3.0 EDUC 113	3.0 EDUC 123	3.0	
HIST 161	4.0 ENGL 102 or 112	3.0 ENGL 103 or 113	3.0	
PSY 101	3.0 HIST 162 or 163	4.0 MATH 173	3.0	
UNIV T101	1.0 MATH 172	3.0		
	18	18	16	0

Second Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP 101	1.0 EDUC 216	3.0 EDEX 366 or 368	3.0 EDLT 325	3.0
EDEX 344	3.0 HIST 201	4.0 EDUC 308	3.0 EDUC 322	3.0
EDUC 112	3.0 HIST 214	4.0 EDUC 305	1.0 HIST 275	3.0
EDUC 205	1.0 PSCI 110	4.0 HIST 202	4.0 PSCI 375	4.0
EDUC 223	3.0 PSY 150	3.0 HIST 203	4.0 SOC 101	3.0
EDUC 365	3.0	PSCI 140	4.0	
	14	18	19	16

Third Year

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COOP EXPERIENCE	COOP EXPERIENCE	EDLT 326	3.0 EDUC 312	3.0
EDUC 356	3.0	EDUC 316	3.0 EDUC 324	3.0
		PSY 320	3.0 PSCI 150	4.0
		SOC 335	3.0 SOC 210	4.0
	3	0	12	14

Fourth Year

Fall	Credits Winter	Credits Spring	Credits
EDUC 409	9.0 ECON 201	4.0 ECON 202	4.0
PSCI 220	4.0 EDUC 410	9.0 EDUC 405	1.0
		HIST 212	4.0
		PSCI 240	4.0
	13	13	13

Total Credits 187

Education Faculty

Jennifer Adams, EdD (*Harvard University*). Associate Professor. Comparative and international education; Poverty and education; Child welfare; Educational policy.

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Constance Lyttle, PhD, JD (*University of Pittsburgh, Duquesne University*). Clinical Professor. Legal rights of gifted and talented children and children with disabilities; inclusive education of exceptional children;

special education mediation; special education IEP/IFSP facilitation; resolution session facilitation

Joy Phillips, PhD (*The University of Texas at Austin*). Associate Clinical Professor. Visionary leadership in theory and practice, school reform as innovative problem-setting, thinking qualitatively about school reform. thinking about school reform by drawing. Educational Leadership Program Assessment.

Kathleen Provinzano, PhD (*Marywood University*). Assistant Professor. Educational administration.

Harriette Thurber Rasmussen, EdD (*Fielding Graduate Institute*). Assistant Clinical Professor. Educational leadership and change.

Lori Severino, EdD (*Neumann University*). Assistant Professor. Special education, differentiated instruction, reading, Wilson language, multi-sensory instruction, reading comprehension, assessment, adolescent literacy.

Jason Silverman, PhD (*Vanderbilt University*). Professor. Teaching and learning of advanced mathematical ideas (algebra and calculus); improving teachers' ability to orchestrate and sustain inquiry-based and discussion-based instruction; technology in mathematics education.

Joanne Sloand, EdD (*Duquesne University*) Department Chair for Teaching, Learning & Curriculum. Associate Clinical Professor. Special Education Leadership, Trauma-informed care, Parent engagement in special education service delivery.

Toni A. Sondergeld, PhD (*University of Toledo*). Associate Professor. Cognitive and affective assessment development; program/grant evaluation; high stakes testing measurement; STEM education; urban education

Bridget Sweeney Blakely, PhD (*Temple University*). Assistant Clinical Professor. Consultation; Positive Behavior Interventions and Supports (PBIS); Response to Intervention (RtI); Systems-level change; performance feedback

Mary Jean Tecce DeCarlo, EdD (*University of Pennsylvania*). Associate Clinical Professor. Early literacy development, learning differences, knowledge construction, urban education.

Sarah P. Ulrich, EdD (*Saint Joseph's University*) Associate Dean of Teacher Education and Undergraduate Affairs. Clinical Professor. Cross-cultural, language and academic development, school reform, teacher preparation, teacher retention, teacher residencies in urban contexts.

Sheila Vaidya, PhD (*Temple University*). Professor. Educational psychology, school psychology, research design.

Christina Vorndran, PhD (*Louisiana State University*) Program Director, Applied Behavior Analysis and Special Education. Clinical Professor. Designing effective and efficient community-based interventions, Severe behavior disorders, Functional behavior assessment

Christopher G. Wright, PhD (*Tufts University*). Assistant Professor. Engineering and science education, Urban education, elementary teacher education.

Emeritus Faculty

Mary Jo Grdina, PhD (*Case Western Reserve University*). Clinical Professor. Undergraduate studies, science education, curriculum design.

Joyce Pittman, PhD (*Iowa State University of Science and Technology*). Clinical Professor. Curriculum and instruction K-16; teaching English as a foreign language (TEFL); instructional design business education and administration; industrial and career technology; oral and written communication; research methodology; instructional and assistive technology assessment; online learning pedagogy

Fredricka K. Reisman, PhD (*Syracuse University*) *School of Education, Founder, Drexel School of Education*. Professor Emerita. Director, Freddie Reisman Center for Translational Research in Creativity and Motivation, Creator and Former Director-Creativity and Innovation Programs, Co-Director- Drexel/Torrance Center for Creativity and Innovation, Drexel University Named Recognition- Freddie Reisman Faculty Scholarly and Creative Activity Awards

Minor in Design of Learning Technologies

About the Minor

This minor offers a blended campus-based undergraduate-level, education minor in Design of Learning Technologies (DLT) with a thematic focus in design and technology. The minor in DLT is designed to cultivate the knowledge and skills that students across multiple disciplines will need to design environments to support learning and teaching, typically new and emerging technologies.

The minor will provide an option for students to gain a richer understanding of theories of learning for a wide range of educational contexts (e.g., classrooms, museums, after-school, summer camps, etc.), audiences (e.g., teachers, students, corporations, children, adults, etc.), and learning environments (e.g. digital, non-digital, virtual, face-to-face, etc.). The minor program offers 24.0 core credits of instruction.

Admission Requirements

Student must have a 2.5 cumulative GPA or better.

Program Requirements

EDLT 103	Foundation in Education III: Learning Sciences	3.0
EDLT 238	New Media Literacies	3.0
EDLT 301	Learning, Culture & Technology Workshop III	3.0
EDLT 339	Future Pedagogies	3.0
EDLT 353	Play and Learning in Participatory Cultures	3.0
EDLT 354	Learning In and Out of Schools	3.0
INFO 110	Introduction to Human-Computer Interaction	3.0
INFO 310	Human-Centered Design Process & Methods	3.0
Total Credits		24.0

Minor in Education

About the Minor

The minor in Education provides a structured academic opportunity for students who wish to add a fundamental understanding of the field of education as well as practical knowledge in the art and science of teaching and learning to their undergraduate experience.

Designed for students with a strong interest in education and training, the minor will not necessarily lead to the student being recommended for a state teaching certificate; however, should a student decide to also pursue a teaching certificate as a component of their major—or in post-

baccalaureate work—the courses required for the minor are applicable to Pennsylvania state certification.

Program Requirements

Required Courses		
EDEX 142	Special Education Foundations: Referral and Assessment	3.0
EDEX 346 [WI]	Literacy and Content Skill Development PreK-8	3.0
EDLT 325	Design for Learning with Digital Media	3.0
or EDUC 308	Creating a Positive Classroom Climate	
EDUC 101	Foundations in Education I: A Historical and Philosophical Perspective	3.0
or EDUC 316	Teaching in Urban Contexts	
EDUC 120	Child Development I: Typical Development	3.0
or EDUC 123	Adolescent Development	
or EDUC 223	Teaching the Middle School Child	
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 322	Evaluation of Instruction	3.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
or EDUC 365	Foundations in Instructing English Language Learners	
Total Credits		24.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Minor in Sport Coaching Leadership

About the Minor

The minor in Sport Coaching Leadership (SCL), open to all undergraduate students across the University, provides the foundation for the effective coaching and managing of athletes at various levels. The minor is complementary to a variety of degree programs.

Upon completion of the minor, students will have developed the ability to communicate and motivate athletes, enhance the social and emotional growth of athletes, develop sound physical training programs, use sport skills effectively, inform athletes about the principles of good nutrition, reduce injuries by managing roles better, effectively deal with equipment,

facilities, scheduling and team logistics and understand the administrative facets of coaching.

Program Requirements

Required Core Courses

SCL 101	Principles of Coaching	3.0
SCL 102	Principles of Coaching II	3.0
SCL 203	Sports Conditioning	3.0
SCL 210	Prevention and Care of Athletic Injuries	3.0
SCL 495	Coaching Practicum I	3.0
or SCL 496	Coaching Practicum II	3.0

SCL Minor Electives

Select 9 credits from the following		9.0
PSY 245 [WI]	Sports Psychology	
SCL 201	Sport-Based Youth Development	
SCL 280	Kinesiology	
SCL 314	Sport Performance and Energy Systems	
SCL 315	Athletic Recruiting	
SCL 325	Athlete Leadership Development	
SCL 345	Evaluating Athletes and Teams	
SCL 401	Professional Coaching Portfolio	
SCL 419	Global Coaching Seminar	
Total Credits		24.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Minor in STEM Education

About the Minor

This minor can be coupled with a variety of STEM majors. It will provide an opportunity to explore STEM education and to develop core knowledge and practices in secondary STEM education. Successful STEM Education minor candidates may build upon the minor's coursework which leads to recommendation for PA teaching certification as a secondary teacher (grades 7-12) in one or more STEM content areas. Additional coursework for teacher certification includes student teaching and required Special Education and English Language Learner courses (an additional 2 courses + student teaching).

Program Requirements

Introductory Courses

ESTM 201	DragonsTeach: Step 1	1.5
ESTM 210	DragonsTeach: Step 2	1.5

STEM Education Core Courses

ESTM 301	Knowing and Learning in Mathematics and Science	3.0
ESTM 302	Classroom Interactions	3.0
ESTM 350	Project-Based Instruction	4.0

History of Science or Mathematics Course *

ESTM 362	Perspectives in Science and Mathematics Education	3.0
or MTED 428	Cultural and Historical Significance of Mathematics	
or HIST 285	Technology in Historical Perspective	

STEM Research Methods **

ESTM 364	Methods of Research and Inquiry in Science and Mathematics	3.0
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Special Education or English Language Learner Elective

EDEX 142	Special Education Foundations: Referral and Assessment	3.0
or EDEX 244	Inclusionary Practices for Exceptional Students	
or EDUC 365	Foundations in Instructing English Language Learners	

STEM Education Elective (selected in consultation with a School of Education academic advisor)

Total Credits		25.0
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* Specific course selected in consultation with a School of Education academic advisor and is dependent on student's aspirations for teacher certification.

** A Research/Methods/Design course from a student's home department may be substituted in consultation with a School of Education academic advisor.

NOTE: If pursuing PA teaching certification requirements beyond the STEM Minor, all three Special Education or English Language Learner Elective courses listed above must be taken as well as ESTM 410. In addition, students specifically pursuing secondary level Mathematics PA Teacher Certification must also complete ESTM T380: Functions and Modeling.

Certificate in Creativity and Innovation

Certificate Level: Undergraduate

Admission Requirements: High school diploma

Certificate Type: Certificate

Number of Credits to Completion: 18.0

Instructional Delivery: Campus

Calendar Type: Quarter

Expected Time to Completion: 2 years

Financial Aid Eligibility: Not aid eligible

Classification of Instructional Program (CIP) Code: 30.9999

Standard Occupational Classification (SOC) Code: 11-9199

About the Program

The undergraduate certificate in Creativity & Innovation (C&I) provides the fundamentals of creative problem-solving content and competencies indicative of creative leaders. The Certificate in C&I provides students with the content knowledge of what creativity is and is not, and the tools and skills to identify and enhance their creative strengths and abilities, while fostering their ability to apply creativity in their personal lives and in a leadership role within the workplace.

Students have the option of completing this undergraduate certificate as a standalone professional development credential or as a concentration within their baccalaureate degree.

Program Requirements

Requirements		
Core Courses		
CRTV 301	Foundations in Creativity	3.0
CRTV 302	Tools and Techniques in Creativity	3.0
CRTV 303	Creativity in the Workplace	3.0
Electives		
Select three of the following:		9.0
EDLT 101	Learning, Culture & Technology Workshop I	
EDLT 238	New Media Literacies	
EDLT 353	Play and Learning in Participatory Cultures	
PRST 450	Creative Leadership for Professionals	
WRIT 220 [WI]	Creative Nonfiction Writing	
WRIT 225 [WI]	Creative Writing	
Total Credits		18.0

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/writing-intensive-courses/>) at the University Writing Program (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/>). (<http://drexel.edu/coas/academics/departments-centers/english-philosophy/university-writing-program/drexel-writing-center/>) Students scheduling their courses can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

Index

B

BS in Teacher Education 28

C

Certificate in Creativity and Innovation 56

D

Design of Learning Technologies 4

E

Elementary Education 7

Elementary Education: Middle Level Science and Math 23

Elementary Education: Middle Level Math and English 16

Elementary Education: Middle Level Science and English 20

Elementary Education: Non-Certification 27

Elementary Education: PK-4 9

Elementary Education: PK-4 and Special Education 13

M

Minor in Design of Learning Technologies 55

Minor in Education 55

Minor in Sport Coaching Leadership 55

Minor in STEM Education 56

T

Teacher Education: Biology 31

Teacher Education: Chemistry 34

Teacher Education: Earth and Space Science 38

Teacher Education: Earth and Space Science 38

Teacher Education: English 38

Teacher Education: General Science 41

Teacher Education: Mathematics 45

Teacher Education: Physics 48

Teacher Education: Social Studies 51

The School of Education 1