

## Program Overview

The Department of Curriculum and Instruction in the College of Education at Texas State offers a Ph.D. in Postsecondary Student Success in Learning, Literacy, and Mathematics that produces researchers, university faculty, and scholars focused on building strong research and theoretical base for postsecondary student success. The Ph.D. is designed to fill the urgent need for advanced research in an emerging field that serves those who are underprepared for postsecondary education.

## Mission Statement

The doctoral program in Postsecondary Student Success in Learning, Literacy, and Mathematics within the Department of Curriculum and Instruction prepares future scholars, researchers, leaders, administrators, instructors, and practitioners in the field of postsecondary student success. Both rigorous and supportive, the program aims to advance theory, research, and practice in multiple areas of postsecondary student success — learning, literacy, and mathematics — by actively engaging students in teaching, scholarship, and professional service. As a multidisciplinary program, the faculty, staff, and students work collaboratively across various academic disciplines, diverse communities, and geographic boundaries.

## Educational Goal

Major educational objectives for the programs include the following:

- To prepare postsecondary student success professionals who engage in divergent and critical thinking, are culturally competent, and are skilled in maximizing technology applications for learning and communication;
- To prepare postsecondary student success professionals who understand and can respond to the nature and needs of students who enroll in postsecondary programs; the complexities of motivation, teaching, learning, and assessment in postsecondary settings; the cultural, political, and social systems that create inequities in educational settings; and the structure and management of academic support programs;
- To prepare postsecondary student success professionals with sophisticated research skills that will enable them to critically evaluate postsecondary programs and practices and implement research agendas that will inform practice and policy;
- To prepare postsecondary student success professionals who will serve as leaders in postsecondary educational settings who can engage in institutional leadership, program administration, and innovative program development and evaluation that will promote systemic change and improvement.

## Advising

Advising takes three forms: the initial advisor, the program mentor, and the dissertation advisor. When students are first admitted, they are assigned an initial advisor who mentors them from entry through their first year benchmarks in the program. By the end of the first year, students formally ask a faculty member to be their program mentor who advises them from the end of their first year until their comprehensive exams. At a time no later than the completion of their comprehensive exams, students then select a dissertation advisor who is the chair of their dissertation committee, which must be formed at that time. These advising roles can be assumed by the same faculty member or different faculty members depending on students' research interests and foci.

In their first term, students will construct a program plan with the assistance of their initial advisor. The program plan is a focused, detailed description of the doctoral student's proposed course work, specialization, and goals for the doctoral program. The program plan will be submitted to the doctoral program plan committee for approval and suggestions. The program plan must include the following:

- goal statement that includes doctoral study goals (including specialization) and future professional goals
- professional curriculum vitae
- course work plan. This is the appropriate place for petitioning for course transfer for graduate work done previously (there is a 5-year time limit on any course work counting toward candidacy).

The student should work with their advisor for direction while completing the program plan prior to submitting it to the program plan committee. It is due to the program plan committee by November 15 in the fall term of the student's first year of study. After the program plan committee reviews the student's program plan, a meeting may be scheduled with the student for further review of the plan.

## Application Requirements

The items listed below are required for admission consideration for applicable semesters of entry during the current academic year. Submission instructions, additional details, and changes to admission requirements for semesters other than the current academic year can be found on The Graduate College's website (<http://www.gradcollege.txstate.edu>). International students should review the International Admission Documents page (<http://mycatalog.txstate.edu/graduate/admission-documents/international/>) for additional requirements.

- completed online application
  - \$55 nonrefundable application fee
- or
- \$90 nonrefundable application fee for applications with international credentials
  - baccalaureate degree from a regionally accredited university (Non-U.S. degrees must be equivalent to a four-year U.S. Bachelor's degree. In most cases, three-year degrees are not considered. Visit our International FAQs (<https://www.gradcollege.txst.edu/international/faqs.html>) for more information.)
  - master's degree from a regionally accredited university or demonstrated success in graduate-level studies or professional experience in a field relevant to postsecondary student success in learning, literacy, or mathematics
  - The Postsecondary Student Success in Learning, Literacy, and Mathematics doctorate (both Ph.D. and Ed.D. tracks) requires 96 semester credit hours for students admitted with a bachelor's degree. Students admitted with a bachelor's degree will follow the same program of study as students admitted with a master's degree (66 semester credit hours), but with an additional 30 semester credit hours of open electives.
  - official transcripts from **each institution** where course credit was granted
  - minimum 3.0 GPA (on a 4.0 scale) in all completed graduate course work
  - resume/CV

- statement of purpose (approximately 500-1000 words) demonstrating the student's research interest and goals as a postsecondary student success professional and potential to contribute to the advancement of scholarly work in the field of postsecondary student success. Students should discuss relevant teaching, research, and/or policy experience as well as provide clear evidence of a commitment to research and scholarship.
- three letters of recommendation addressing the student's professional and academic background
- interviews with the admissions committee will be arranged, following the initial screening using the admissions criteria listed above, for qualified applicants

### Approved English Proficiency Exam Scores

Applicants are required to submit an approved English proficiency exam score that meets the minimum program requirements below unless they have earned a bachelor's degree or higher from a regionally accredited U.S. institution or the equivalent from a country on our exempt countries list (<http://www.gradcollege.txstate.edu/international/language.html#wavier>).

- official TOEFL
- official TOEFL iBT scores required with a 78 overall
- official PTE scores required with 52 overall
- official IELTS (academic) scores required with a 6.5 overall and minimum individual module scores of 6.0
- official Duolingo Scores required with a 110 overall
- official TOEFL Essentials scores required with an 8.5 overall

This program does **not** offer admission if the scores above are not met.

## Degree Requirements

The Doctor of Philosophy (Ph.D.) degree with a major in Postsecondary Student Success in Learning, Literacy, and Mathematics concentration in Literacy requires 60 semester credit hours or 90 semester credit hours for students admitted with a bachelor's degree. Students admitted with a bachelor's degree will follow the same program of study as students admitted with a master's degree (60 semester credit hours), but with an additional 30 semester credit hours of open electives.

## Course Requirements

Code	Title	Hours
<b>Required Courses</b>		
DE 7301	Understanding Learners in Developmental Education Contexts	3
DE 7303	Teaching and Learning in Developmental Education	3
DE 7305	Diversity in P-16 Educational Contexts	3
CI 7351	Beginning Quantitative Research Design and Analysis	3
CI 7302	Research Methods and Measurement in Education	3
CI 7352	Beginning Qualitative Design and Analysis	3
CI 7390	Dissertation Proposal Development	3
Choose 9 hours from the following:		
CI 7353	Intermediate Quantitative Research Design and Analysis	3

CI 7354	Intermediate Qualitative Design and Analysis	
CI 7358	Theoretical and Conceptual Frameworks in Qualitative Research	
CI 7359	Seminar in Quantitative Research	
<b>Concentration</b>		
Choose 18 hours from the following:		18
RDG 7301	Theory and Research of Literacy	
RDG 7302	Theory and Research of College Basic Literacy	
RDG 7303	Theory and Research of College Academic Literacy	
RDG 7304	Theory and Research of Literacy Instruction for Culturally and Linguistically Diverse Readers	
RDG 7305	Theory and Research of College Literacy Assessment	
RDG 7306	Literacy Research Seminar	
RDG 7371	Theory and Research of Postsecondary Integrated Reading and Writing	
RDG 7372	Theory and Research of New Literacies Studies in Developmental Education	
RDG 7373	Community Literacies	
ENG 7300	Language Problems in a Multicultural Environment	
ENG 7316	Foundations in Rhetoric and Composition	
ENG 7317	Specializations in Rhetoric and Composition	
ENG 7326	Contemporary Composition Theory	
ENG 7383	Studies in Rhetorical Theory	
<b>Dissertation</b>		
Choose a minimum of 12 hours from the following:		12
DE 7199	Dissertation	
DE 7299	Dissertation	
DE 7399	Dissertation	
DE 7599	Dissertation	
DE 7699	Dissertation	
DE 7999	Dissertation	
<b>Total Hours</b>		<b>60</b>

## Advancement to Candidacy

### Application for Advancement to Candidacy

Once all course work (except for dissertation course work) has been completed, the comprehensive exams have been passed, and the dissertation proposal has been successfully defended, doctoral students will apply for advancement to candidacy. Candidacy must be achieved within five (5) years of initiating program course work. No credit will be applied toward the doctoral degree for course work completed more than five (5) years before the date on which the student is advanced to candidacy. This time limit applies toward credit earned at Texas State as well as credit transferred to Texas State from other accredited institutions. Requests for a time extension must be made to the program, which in turn submits a recommendation to The Graduate College. Achieving doctoral candidacy allows the student to begin doctoral dissertation research. Candidacy forms are found here: [http://www.gradcollege.txstate.edu/Fac\\_Resources/Forms.html](http://www.gradcollege.txstate.edu/Fac_Resources/Forms.html).

### Grade-Point Requirements for Advancement to Candidacy

To be eligible for advancement to candidacy, the student must have a minimum GPA of 3.0. No grade earned below a "B" on any graduate

course may apply toward a doctorate at Texas State. Incomplete grades must be cleared through The Graduate College before a student can be approved for advancement to candidacy.

## Comprehensive Exams

All students in the Doctoral Program in Postsecondary Student Success in Learning, Literacy, and Mathematics are required to pass a Comprehensive Examination at the conclusion of coursework, prior to moving into the dissertation phase of the program. The purposes of this exam are to demonstrate mastery of the coursework content and preparation for independent research. Ideally, this process will begin during students' last semester of coursework, and will be completed the same semester.

Students will first discuss their ideas for the comprehensive examination with their advisor. Students will then form a comprehensive exam committee that is comprised of, at least, their advisor (as Chair) and two other faculty members from the Postsecondary Student Success in Learning, Literacy, and Mathematics program.

After stating their intention to take the comprehensive exam at the beginning of the semester, students will submit written responses to three foreknown items and participate in an oral defense of their work that includes a student presentation about their written responses to the items and fielding of faculty questions. Committee evaluations will be either pass, needs revisions, or does not pass. If applicable, students will have two weeks to make revisions, and committee evaluations of the revised work will be either pass or does not pass. Students who do not pass, will have two more attempts to pass the comprehensive exam before being discontinued from the program.

## Dissertation Proposal

At a time no later than the completion of their comprehensive exams, students must select a dissertation advisor. After selecting their dissertation advisor, and before beginning their dissertation proposal, students will form a dissertation committee that will provide technical support for the inception, conduct, and completion of the dissertation research study and evaluate the final product. The student will undertake the research and write the dissertation under the guidance of their dissertation advisor. The dissertation proposal must be successfully defended and approved by the dean of The Graduate College before a student can be advanced to candidacy. Information about the dissertation procedures can be found in the Dissertation tab.

Students must submit the dissertation proposal and one copy of the official "Dissertation Proposal form" (available on The Graduate College website) to the dissertation advisor. After obtaining committee members' signatures, the student must submit the dissertation proposal and dissertation proposal form to the program director for signature. The form also requires evidence of the IRB approval for any research involving human subjects. The program director will then forward the dissertation proposal and form through the department chair to the dean of The Graduate College for final approval. Final approval must be received before proceeding with the defense of the dissertation proposal. The Dissertation Proposal form may be obtained from The Graduate College website.

## Defense of the Dissertation Proposal

Students must defend the dissertation proposal in a meeting that begins with a public presentation and continues with an oral examination by the dissertation committee. The examination will address the proposed dissertation topic (problem definition and scope), relevant literature, and research method. The dissertation committee must sign the

"Defense of the Dissertation Proposal form" to indicate approval and then submit the form for the signature of the doctoral program director and the department chair. The approved Defense of the Dissertation Proposal form must be forwarded to the dean of The Graduate College. The dissertation proposal must be approved and the Defense of the Dissertation Proposal form must be on file in the office of The Graduate College before any student can advance to candidacy and begin dissertation research.

## Recommendation for Advancement to Candidacy

The dissertation committee recommends the applicant for advancement to candidacy to the doctoral program director, the department chair, and the dean of The Graduate College. The dean of The Graduate College certifies the applicant for advancement to candidacy once all requirements have been met. To be eligible for admission to candidacy the student must have successfully completed the comprehensive exam, completed all course work, and successfully defended the dissertation proposal.

## Dissertation Research and Writing

All doctoral students are required to complete a dissertation. The dissertation must be an original contribution to scholarship and the result of independent investigation in a significant area. Preparation of the dissertation must follow the latest edition of the *Publication Manual of the American Psychological Association*.

## Dissertation Enrollment Requirements

Any time a student is receiving official guidance on the dissertation, the student must be enrolled in a dissertation course. A student must maintain continuous enrollment in dissertation hours every term from the time they advance to candidacy until the dissertation is defended and approved. If a student is receiving supervision on the dissertation during the summer or the student is graduating during the summer, the student must be enrolled in dissertation hours for the summer. All candidates for graduation must be enrolled in dissertation hours during the term in which the degree is to be conferred. Students must enroll in a minimum of 12 dissertation credit hours.

## Dissertation Time Limit

Students must complete the dissertation within five (5) years of advancement to candidacy. The student's dissertation advisor, with the student's dissertation committee, will review the student's progress annually.

## Dissertation Advisor and Dissertation Committee

The dissertation committee must be composed of four approved doctoral graduate faculty members. The doctoral student must select a minimum of four committee members, one of which must be outside the program. The chair of the dissertation committee must be from the program. All committee members must hold at least associate doctoral faculty status, and chairs must hold core doctoral faculty status. To form the dissertation committee, the "Dissertation Committee Request form" must be completed and signed by the student, committee members, committee chair, doctoral program director, and the department chair and then forwarded to the dean of The Graduate College for approval and signature. The required Dissertation Committee Request form may be obtained from The Graduate College website.

## Committee Changes

Any changes to the dissertation committee must be submitted for approval to the dissertation advisor, the doctoral program director, the department chair, and the dean of The Graduate College. Changes must be submitted no less than sixty (60) days before the final dissertation defense. The "Dissertation Advisor/Committee Member Change Request form" may be obtained from The Graduate College website.

## Defense of the Dissertation

All dissertations must meet the following requirements as judged by the student's dissertation committee:

1. a systematic investigation of a problem,
2. informed by previous theory and research,
3. that adds to the body of knowledge in the area of investigation, and
4. is presented in a form capable of dissemination to scholars and practitioners.

Students must pass the final oral examination that covers the dissertation and the general field of the dissertation. Students must defend the dissertation in a meeting that begins with a public presentation and continues with an oral exam by the dissertation committee. Before scheduling the final oral exam, the student must have received approval of the dissertation advisor. A completed "Dissertation Defense Report form" must be submitted according to the schedule posted by the dean of The Graduate College and no later than ten days before the date of graduation. The student must complete all aspects of the dissertation, including successful defense and submission of the dissertation to The Graduate College, within five (5) years of advancement to candidacy.

## Approval and Submission of the Dissertation and Abstract

The approval of the dissertation requires positive votes from the dissertation advisor and from a majority of the dissertation committee members. Once the committee has approved the dissertation, one copy of the dissertation and the signed "Committee Approval form" must be submitted to the dean of The Graduate College for final approval. Refer to the *Graduate College Guide to Preparing and Submitting a Thesis or Dissertation* for specific guidelines.

Doctoral level courses in Developmental Education: CI (p. 4), DE (p. 6), ENG (p. 8), MATH (p. 8), RDG (p. 15)

## Courses Offered

### Curriculum and Instruction (CI)

#### CI 7101. Introduction to the Research Experience.

This course is designed to introduce students to the program and to the ongoing research activities of its faculty. Emphasis is placed on identifying and coordinating opportunities for joint research and scholarship among faculty and students. Students must enroll in the course for three semesters before dissertation.

**1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Standard Letter

#### CI 7302. Research Methods and Measurement in Education.

This course provides a comprehensive introduction to educational research with a focus on research design, research methods and methodology, and fundamental measurement issues in quantitative, qualitative, and mixed-methods research.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

#### CI 7303. Educational and Psychological Measurement and Assessment.

Philosophical and empirical foundations of measurement, assessment, testing, and evaluation. Topics include philosophical and mathematical foundations in research; empirical levels and measurement description; test construction; observational rating scales; measurement interpretation; social, legal, and ethical implications; item analysis/refinement for scale performance; reliability and validity evidence; and standardized and placement tests.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

#### CI 7310. Teaching in College.

Teaching strategies for teaching/instructional assistants focused on creating syllabi, adapting to diverse student populations, collaborating with colleagues and staff, implementing active learning strategies, fostering assigned reading, assessing learning, and integrating technology. This course does not earn graduate degree credit.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Graduate Assistantship|Exclude from Graduate GPA

**Grade Mode:** Leveling/Assistantships

#### CI 7326. Grant Development and Management.

This course focuses on developing competitive grant proposals and understanding grant management resources. Strategies will encompass locating funding sources, evaluating proposals, developing proposals and budgets, and methods of meeting accountability requirements.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

#### CI 7351. Beginning Quantitative Research Design and Analysis.

This course introduces students to quantitative research design and analysis. Topics include descriptive statistics; sampling techniques; statistical inference, including the null hypothesis, significance tests, and confidence intervals; and causal-comparative analyses, including t-test and ANOVA. Corequisite: CI 7302 with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Multicultural Perspective|Multicultural Content

**Grade Mode:** Standard Letter

**CI 7352. Beginning Qualitative Design and Analysis.**

This course introduces students to the qualitative paradigm. Topics include distinctive features, alternative qualitative traditions, purposeful sampling, common data collection methods, inductive analysis, the role of the researcher, and evaluation of qualitative research. Corequisite: CI 7302 with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7353. Intermediate Quantitative Research Design and Analysis.**

This course focuses on intermediate quantitative research design and statistical methods of data analysis related to problems in education, psychology, sociology, and biological sciences. The general linear model based univariate and selected multivariate statistical techniques are examined including theory/purpose, logic, practical implications, and interpretation of various analytic techniques. Prerequisite: CI 7351 with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7354. Intermediate Qualitative Design and Analysis.**

This course focuses on issues in design and implementation of qualitative research. Topics include influence of alternative traditions, literature in qualitative research, access to the field and ethical issues, researcher-participant relationships, purposeful sampling strategies, inductive analysis procedures, developing theory, and reporting research. Prerequisite: CI 7352 with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7355. Mixed Methods in Research and Evaluation.**

This course will cover mixed methods research designs that can be used in the evaluation of educational interventions and programs. Topics include mixed methods research designs, program evaluation models, quantitative and qualitative data analysis and interpretation, reading mixed methods research articles, and writing mixed methods research proposals and evaluation reports. Prerequisite: CI 7351 and CI 7352 both with grades of "B" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7358. Theoretical and Conceptual Frameworks in Qualitative Research.**

This course is intended for those versed in current paradigmatic and epistemological states of human inquiry and presents an opportunity to design a research project and address the major issues of a research career. Prerequisite: CI 7352 and CI 7354 both with grades of "B" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7359. Seminar in Quantitative Research.**

This course is a small-group seminar that focuses on analytic strategies specific to the doctoral student's dissertation topic. Examples include structural equation modeling, hierarchical linear modeling, log linear modeling, non-parametric analyses, factor analysis, factorial analysis of variance, and other multivariate statistical methods. Prerequisite: CI 7351 and CI 7353 both with grades of "B" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7360. Designing Educational Research.**

Students identify problems in Developmental Education, develop a strategic proposal to apply to these problems, and create an evaluation plan to assess the implementation of their proposal. Students also develop skills in critiquing research reports and in synthesizing research from Developmental Education. Prerequisite: CI 7353 or CI 7354 or CI 7355 any with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7378. Independent Study.**

Individual problems or topics will be designed and completed to emphasize selected areas of study in the Department of Curriculum and Instruction. May be repeated for additional credit at the discretion of the program coordinator.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7386. Directed Research.**

Students will participate in an authentic research experience, either by working as part of a doctoral faculty member's research team or developing an original research project.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Standard Letter

**CI 7388. Educational Leadership for Social Justice.**

This course provides an in-depth study of the theories and practices related to educational leadership in PreK-12 educational contexts through a social justice lens. Students will examine current social justice issues in schools and develop strategies for conceptualizing and implementing institutional change that works toward a more equitable education.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**CI 7389A. Topics in Instructional Technology.**

This topic offers an in-depth study of systematic instructional design emphasizing the selection and use of appropriate media for delivering instruction to maximize student learning. Special emphasis in this topic is on the leader's role in influencing the use of technology.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**CI 7389C. Special Topics: Race Theory in Educational Research.**

This course will explore racial theories and paradigms applicable to the study of race in K-20 educational settings. Students will analyze foundational scholarship in the formation of racial theories, research methodology, key tenets of race research, and literature pertinent to current trends in educational research regarding race. (MULT).

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Multicultural Content|Topics

**Grade Mode:** Standard Letter

**CI 7390. Dissertation Proposal Development.**

In this course students approaching dissertation stage clarify a research problem and develop a preliminary proposal for dissertation. Instruction addresses dissertation proposal development and is adaptive to students' research problems and methods. Dissertation chair approval to enroll in the course is required. Prerequisite: CI 7351 and CI 7352 and [CI 7353 or CI 7354 or CI 7355] all with grades of a "B" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**Developmental Education (DE)****DE 7199. Dissertation.**

Original research and writing in Developmental Education are to be accomplished under direct supervision of the dissertation chair. While conducting research and writing, students must be continuously enrolled each long semester (and in summer semesters as appropriate).

**1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Credit/No Credit

**DE 7299. Dissertation.**

Original research and writing in Developmental Education are to be accomplished under direct supervision of the dissertation chair. While conducting research and writing, students must be continuously enrolled each long semester (and in summer semesters as appropriate).

**2 Credit Hours. 2 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Credit/No Credit

**DE 7301. Understanding Learners in Developmental Education Contexts.**

This course identifies the evolution, characteristics, demographics, and needs of learners in Developmental Education contexts. Emphasis is placed on understanding internal factors, including the cognitive, affective, and psychosocial needs of students, as well as on analyzing external factors, including the social, political and institutional forces that impact learners' educational experiences. (MULT).

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Multicultural Content

**Grade Mode:** Standard Letter

**DE 7302. Policy and Politics in Developmental Education.**

This course addresses the policy and politics of planning, funding, implementing, and evaluating Developmental Education programs in postsecondary education. Readings and discussions focus on current and historical issues relevant to addressing the academic needs of educationally disadvantaged students from the perspective of researchers, program directors, policy analysts, and instructors.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**DE 7303. Teaching and Learning in Developmental Education.**

The course focuses on the institutional development, intellectual development, learner development, and self-development for effective teaching and learning in developmental education. Topics include instructional and learner theories, pedagogies, assessment and evaluation techniques, and best practices for instruction and intervention.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**DE 7304A. Curriculum Design in Developmental Education.**

This course focuses on principles and processes of curriculum design and implementation in developmental education contexts, including examination of emerging research and issues. The course pedagogy also engages students in independent curriculum research, planning, and problem-solving.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**DE 7304B. Theory and Research of Digital Literacies.**

This course focuses on understanding the complex relationships between technology, teaching, and learning in varied developmental education environments. Tools and strategies for planning, integrating, and assessing technology-supported instruction are explored within frameworks linking theory to practice.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**DE 7304D. Transformative Learning.**

This course introduces students to the core principles of transformative learning. The course is a theory-driven, project-based advanced class designed to enable students to develop theoretical perspectives, engage in intensive practice, and understand the use of transformative learning for applications with postsecondary individuals, groups, and organizations.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**DE 7304E. Current Topics in Motivation Intervention Research.**

This course focuses on analyzing, synthesizing, discussing, and applying cutting-edge research on various types of motivation interventions in education. Emphasis will be placed on theory, research, and practice in postsecondary educational settings and Developmental Education contexts.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**DE 7304F. Current Topics in Strategic and Self-Regulated Learning Intervention Research.**

This course examines cutting-edge research on strategic and self-regulated learning interventions. Emphasis will be placed on theory, research, and practice relevant to postsecondary educational settings, however, students will be encouraged to apply course content to their areas of interest which may be outside of postsecondary educational settings.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**DE 7305. Diversity in P-16 Educational Contexts.**

This course uses critical multicultural frameworks to trace the evolution of learners in a P-16 educational system. Students in this course examine school practices and policies in an attempt to map the educational trajectory and improve the educational experiences of P-16 students who are underrepresented and underserved. (MULT).

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Multicultural Content

**Grade Mode:** Standard Letter

**DE 7321. The Community College.**

Introduction to community college and to its roles and functions in American education. Special attention will be directed to evolution, development and patterns of organization, purposes, programs, personnel and current issues of the community college.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**DE 7322. Learning Support Centers in Postsecondary Settings.**

The course explores the learning assistance movement in postsecondary settings including its history, leaders, and current research. Topics include program planning; leadership, organization, and management; human and financial resources; facilities and equipment; legal responsibilities; equal opportunity and access; diversity; ethics; campus and community relations; and assessment and evaluation.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**DE 7323. Academic Support for Students with Learning Disabilities.**

The course focuses on Learning Disabilities (LD) and Executive Function (EF) Disorders and their nature, prevalence, and significance in postsecondary environments. Topics include theories about the origins and nature of LD and EF, development across the lifespan, characteristics of individuals, and approaches to service, delivery and teaching. (MULT).

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Multicultural Content

**Grade Mode:** Standard Letter

**DE 7324. Teaching Learning Strategies and Critical Thinking in Postsecondary Contexts.**

This course explores theory and pedagogy of learning strategies, problem solving, and critical thinking skills in postsecondary contexts. Topics include variables in teaching and learning, methods of assessment, and approaches to instruction.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**DE 7325. Advising, Coaching, and Mentoring Learners in Postsecondary Education.**

The course will focus on theories and techniques of academic advising, coaching, and mentoring skills for learners enrolled in postsecondary education. Didactic and experiential activities will provide students enrolled in the course with opportunities to learn and practice skill development within these academic support programs.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**DE 7327. Student Motivation and Self-Regulation.**

This course focuses on research-based theories of student motivation and self-regulation. It also highlights practical applications of these theories for students in developmental education and postsecondary contexts.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**DE 7380. Managing Developmental Education Programs.**

This course focuses on the theoretical and practical elements of management of Developmental Education programs in higher education. Readings and discussions focus generally on best practices in higher education leadership and specifically on best practices in leadership and management in Developmental Education.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**DE 7381. Practicum.**

A 150-clock hour, one-semester practical experience in an institution or agency other than one's own; site selection needs approval of program coordinator. Practicum students will participate in leadership activities to include program planning, management, budgeting, and/or evaluation.

**3 Credit Hours. 0 Lecture Contact Hours. 10 Lab Contact Hours.**

**Grade Mode:** Credit/No Credit

**DE 7399. Dissertation.**

Original research and writing in Developmental Education are to be accomplished under direct supervision of the dissertation chair. While conducting research and writing, students must be continuously enrolled each long semester (and in summer semesters as appropriate).

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Credit/No Credit

**DE 7599. Dissertation.**

Original research and writing in Developmental Education are to be accomplished under direct supervision of the dissertation chair. While conducting research and writing, students must be continuously enrolled each long semester (and in summer semesters as appropriate).

**5 Credit Hours. 5 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Credit/No Credit

**DE 7699. Dissertation.**

Original research and writing in Developmental Education are to be accomplished under direct supervision of the dissertation chair. While conducting research and writing, students must be continuously enrolled each long semester (and in summer semesters as appropriate).

**6 Credit Hours. 6 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Credit/No Credit

**DE 7999. Dissertation.**

Original research and writing in Developmental Education are to be accomplished under direct supervision of the dissertation chair. While conducting research and writing, students must be continuously enrolled each long semester (and in summer semesters as appropriate).

**9 Credit Hours. 9 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Credit/No Credit

**English (ENG)****ENG 7300. Language Problems in a Multicultural Environment.**

An introduction to the study of multicultural language and linguistics with descriptive, psychological, social, and semantic emphases.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**ENG 7314. Specializations in Professional and Technical Communication Topics.**

Provides theoretical and practical information for specialized types of technical and professional communication.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**ENG 7316. Foundations in Rhetoric and Composition.**

A course providing students with theoretical, pedagogical, and/or methodological foundations in the field of rhetoric and composition.

Emphases vary but may include Contemporary Composition Pedagogy, Basic Writing Theory and Practice, and Writing Assessment. Repeatable with different emphases for up to nine hours of English credit.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**ENG 7317. Specializations in Rhetoric and Composition.**

A course providing theoretical, pedagogical, methodological, and/or administrative grounding in specialized areas of rhetoric and composition. Emphases vary but may include Writing Across the Curriculum, Service Learning, Writing Center Theory and Practice, Computers and Writing, Literacy. Repeatable with different emphases for up to nine hours of English credit.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**ENG 7326. Contemporary Composition Theory.**

Introduces students to the history of writing instruction in the university and to the theories of writing and composing that inform contemporary composition studies and the teaching of writing.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**ENG 7383. Studies in Rhetorical Theory.**

An introduction to classical and rhetorical theory in various areas of English studies. Recent emphases include Teaching of Composition and Technical Communication. Repeatable with different emphases for up to nine hours of English credit.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**Mathematics (MATH)****MATH 7111. Seminar in Teaching.**

Seminar on individual study projects concerned with selected problems in the teaching of mathematics. This course does not earn graduate degree credit.

**1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.**

**Course Attribute(s):** Graduate Assistantship|Exclude from Graduate GPA

**Grade Mode:** Leveling/Assistantships

**MATH 7188. Seminar in Mathematics Education.**

Students are required to attend weekly research seminars in Mathematics Education and to give at least one research presentation in the seminar during the semester. This course is repeatable for credit.

**1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7199A. Dissertation.**

Original research and writing in Mathematics Education to be accomplished under direct supervision of the dissertation advisor. While conducting dissertation research and writing, students must be continuously enrolled each long semester.

**1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.**

**Grade Mode:** Credit/No Credit

**MATH 7299A. Dissertation.**

This course represents a Mathematics Education student's dissertation enrollments. The course can be repeated as necessary. The dissertation credit (18 hours) will not be awarded until the dissertation is submitted for binding. Prerequisite: completion of the core and required concentration courses, or approval of student's dissertation advisor.

**2 Credit Hours. 2 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Credit/No Credit

**MATH 7301. Studies in Mathematics.**

This course provides basic foundations in Mathematics for students entering the doctoral program in Mathematics or Mathematics Education. This course may be repeated. This course does not earn graduate degree credit.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Exclude from Graduate GPA|Leveling

**Grade Mode:** Leveling/Assistantships

**MATH 7302. History of Mathematics.**

A study of the development of mathematics and of the accomplishments of men and women who contributed to its progress.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7303. Analysis I.**

This course covers foundations of modern analysis. Topics include: sequences,  $\text{LimSup}$ ,  $\text{LimInf}$ , Sigma Algebras of sets that include open and closed sets, sequences of functions, pointwise and uniform convergence, lower and upper semi-continuity, Borel sets, outer measure, and Lebesgue measure. Prerequisite: MATH 4315.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7306. Current Research in Math Education.**

This course surveys the various current social, political, and economic trends in local, state, national, and international settings that are related to research in Mathematics Education.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7307. Algebra I.**

Applications of Algebra and topics in modern algebra, including permutation groups, symmetry groups, Sylow theorems, and select topics from Ring Theory. Prerequisite: MATH 4307.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7309. Topology I.**

A course in point-set topology emphasizing topological spaces, continuous functions, connectedness, compactness, countability, separability, metrizable, CW-complexes, simplicial complexes, nerves, and dimension theory. Prerequisite: MATH 4330.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7313. Analysis II.**

This course covers the theory of integration with special emphasis on Lebesgue integrals. Topics include: Lebesgue integral, Bounded Convergence theorem, differentiation and integration, absolute continuity, and  $L_p$  spaces. Prerequisite: Math 7303.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7315. Calculus of Variations.**

This course will involve the study of properties of functionals including first and second variations, application to extremal problems, Euler-Lagrange equations, and stability theory. Prerequisite: MATH 7303 with a grade of "B" or higher.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7317. Algebra II.**

A study of the important algebraic structures of rings and fields. Topics covered include rings, ideals, modules, polynomial rings, Euclidean algorithm, finite fields, and field extensions. Topics also include an introduction to Galois Theory with an emphasis on the geometric applications. Prerequisite: MATH 7307.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7319. Topology II: Algebraic Topology.**

This course covers the fundamental concepts and tools of algebraic topology. Topics include the fundamental group, covering spaces, homotopy type, the higher homotopy groups, singular homology theory, and the computation of homology groups via exact sequences and applications. Prerequisite: MATH 7307 and MATH 7309.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7321. Graph Theory.**

Topics in this course include trees, connectivity of graphs, Eulerian graphs, Hamiltonian graphs, planar graphs, graph coloring, matchings, factorizations, digraphs, networks, and network flow problems.

Prerequisite: MATH 3398.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7323. Theories of Knowing and Learning in Mathematics Education.**

This course surveys the major theories of knowing and learning that have influenced mathematics education. These theories include behaviorism, constructivism, sociocultural theories, situated cognition, and others.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7324. Curriculum Design & Analysis.**

This course examines, analyzes, and evaluates the various concepts, topics, methods, and techniques that are related to curriculum design in Mathematics Education for grade levels P-16.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7328. Instructional Techniques & Assessments.**

This course examines, analyzes, and evaluates the various concepts, topics, methods, and techniques of instruction in Mathematics Education and the related assessment procedures for each for grade levels P-20.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7331. Combinatorics.**

This course is a study of fundamental principles of combinatorics. Topics include: permutations and combinations, the Pigeonhole principle, the principle of inclusion-exclusion, binomial and multinomial theorems, special counting sequences, partitions, posets, extremal set theory, generating functions, recurrence relations, and the Polya theory of counting. Prerequisite: MATH 3398.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7342. Research in Undergraduate Mathematics Education I.**

This course will cover the theoretical underpinnings of current and historic Research in Undergraduate Mathematics Education (RUME). Students will develop understanding of relevant theoretical stances and the role those they play in research and develop the capacity to read and interpret RUME research. Prerequisite: Math 7306 with a grade of a "B" or better or instructor approval.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7344. Research in Undergraduate Mathematics Education II.**

This course will allow students to develop the necessary knowledge to design and conduct Research in Undergraduate Mathematics Education (RUME) via topic-driven examination of current RUME research. Students will develop knowledge to support them in research design and development related to the teaching and learning of topics such as proof, analysis/calculus, abstract algebra, linear algebra, and differential equations. Prerequisite: MATH 7306 and MATH 7342 with a grade of a "B" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Standard Letter

**MATH 7346. Quantitative Research Analysis in Mathematics Education.**

This course surveys the various research techniques used in quantitative analysis for mathematics education and covers topics such as experimental design, statistical analysis, and use of appropriate design methodologies to achieve the strongest possible evidence to support or refute a knowledge claim. Prerequisite: MATH 7306 and MATH 7325.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7352. Introduction to Qualitative Research in Mathematics Education.**

This course introduces the principles and techniques of qualitative research methodologies as applied in mathematics education. Topics include distinctive features of qualitative research related to sampling, data sources, the method of constant comparison, validity and generation, and evaluation of qualitative research. Prerequisite: Math 7306 with a grade of "B" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7354. Advanced Qualitative Research.**

This course encompasses the techniques and tools needed for the development, investigation, and demonstration of competence in conducting qualitative research in mathematics education. Principles of qualitative data analysis are a significant focus of the course, with particular attention given to specific methods used to code and analyze data. Prerequisite: ED 7352 with a grade of "B" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Standard Letter

**MATH 7356B. Advanced Qualitative Research.**

This course encompasses investigation, development, and demonstration of competence, design, and execution for mathematics education problems in qualitative research. Prerequisite: ED 7352 or CI 7352.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7356C. Action Research in Mathematics Education.**

This course examines underlying theory and issues in action research model and the development of action research projects. Prerequisites: MATH 7346 or ED 7352.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7358. Advanced Quantitative Research in Mathematics Education.**

This course surveys the various research techniques used in quantitative analysis for mathematics education and covers topics such as experimental design, statistical analysis, and the use of appropriate design methodologies to achieve the most substantial evidence to support or refute a knowledge claim. Prerequisite: MATH 7346 with a grade of "B" or better or permission of instructor.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7361. Seminar in Advanced Mathematics.**

Material in course will vary with the interest of students and faculty. A detailed study of subject matter may be chosen from advanced areas of analysis; algebra; topology and geometry; applied mathematics; and probability and statistics. This course is repeatable for credit when subject matter varies.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7363A. COMPLEX ANALYSIS.**

This course is a brief introduction to the complex number system and basic point-set topology of the complex plane, followed by a proof-based and rigorous study of the principal results of the analysis of functions of a single complex variable. Prerequisite: MATH 4315 with a grade of "D" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7363B. NUMERICAL ANALYSIS.**

This course will involve the analysis of algorithms from science and mathematics, and the implementation of these algorithms using computer algebra systems. Symbolic, numerical, and graphical techniques will be studied. Applications will be drawn from the sciences, engineering, and mathematics. Prerequisite: MATH 3323 with a grade of "D" or better or instructor approval.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7363C. FUNCTIONAL ANALYSIS.**

This course presents the three basic fundamental theorems of functional analysis: the Hahn-Banach theorem, the uniform boundedness theorem, and the open mapping theorem. Prerequisite: MATH 7303 with a "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7363E. Numerical Analysis II.**

This course will involve the analysis and numerical implementation of algorithms to solve partial differential equations. Applications will be drawn from science, engineering, and mathematics. Topics include the numerical solution of linear partial differential equations and the related linear systems of equations. Prerequisite: MATH 7363B with a letter grade of a "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7363F. Functional Analysis II.**

This course will involve the analysis of infinite dimensional vector spaces including spaces of functions, measures, and distributions. Topics include Fourier transforms, theory of Banach spaces, and operator theory. Prerequisite: MATH 7363C with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7366B. Teaching K-12 Students (Elementary, Middle School, and High School).**

This course examines how to develop and teach K-12 students. The course references the recommendations of government agencies and professional organizations and allows for the investigation of research-based models. Prerequisite: MATH 7306.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7366C. Teaching Teachers (In-Service; Pre-Service).**

This course examines how to prepare teachers of mathematics. The course references the recommendations of government agencies and professional organizations and allows for the investigation of research-based models. Prerequisite: MATH 7306.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7366D. Teaching Specialized Content.**

This course will be an in-depth study of a specialized content area in mathematics with an emphasis on teaching. The specific content area will vary by instructor. Examples include Euclidean Simplex Geometry and Discrete Probability Spaces with Implications for Public School Curriculum.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7366E. Developmental Mathematics Curriculum.**

This course surveys the research, development, and evaluation of the scope and sequence of developmental mathematics curriculum. The course references the recommendations of government agencies and professional organizations and allows for the investigation of research-based models.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7367B. ADV GROUP THEORY.**

This course covers topics including properties of solvable, p-solvable and nilpotent groups, group actions, transfer theorems, simple groups and composition series, the generalized Fitting subgroup, automorphism groups, classical groups and linear representations of groups. Prerequisite: MATH 7307 with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7369C. Low-dimensional topology.**

This course is an introduction to low-dimensional topology. Topics include surfaces, 3-manifolds, knots, and 4-manifolds. Prerequisite: MATH 7307 and MATH 7309 both with grades of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7369D. Characteristic Classes.**

This course is an introduction to vector bundles and characteristic classes. Topics covered include Stiefel-Whitney classes, Chern classes, Euler class, Pontrjagin classes, and their computation. Additional topics may include manifold immersion problems. Prerequisite: MATH 7317 and MATH 7319 both with grades of a "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7369E. Differential Geometry.**

This course is an introduction to modern tools of differential geometry. Topics covered include manifolds, Riemannian metrics, connections, covariant derivatives, geodesics, curvatures, extrinsic and intrinsic computations. Other possible topics include hyperbolic geometry, Lie groups, Chern-Weil theory, surfaces of prescribed mean curvature, the Gauss-Bonnet theorem, and the Cartan-Hadamard theorem. Prerequisite: MATH 7307 and MATH 7309 both with grades of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7371A. Advanced Graph Theory.**

Topics in this course include Turan's problems, Ramsey theory, random graph theory, extremal graph theory, algebraic graph theory, domination of graphs, distance problems, and applications. Prerequisite: MATH 7321.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7371B. Advanced Combinatorics.**

Topics in this course include Block designs, Latin squares, combinatorial optimization problems, coding theory, matroids, difference sets, and finite geometry. Prerequisite: MATH 7331.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7371C. Combinatorial Number Theory.**

A study of fundamental techniques in combinatorial number theory. Topics will include Waring's problem, additive number theory, and probabilistic methods in number theory. Prerequisite: MATH 7331.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7371D. Discrete Optimization.**

A study of some fundamental techniques in discrete optimization. Topics include discrete optimization, linear programming, integer programming, integer nonlinear programming, dynamic programming, location problem, scheduling problem, transportation problem, postman problem, traveling salesman problem, matroids, and NP-completeness. Prerequisites: MATH 7321 and 7331.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7371E. Algorithms and Complexity.**

A study of some fundamental concepts of computability and complexity. Topics include polynomially bounded problems, NP-complete problems, exponentially hard problems, undecidable problems, and reducibility. Prerequisite: MATH 7331.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7371F. Probabilistic Methods in Discrete Mathematics.**

A study of some fundamental probabilistic techniques used to solve problems in graph theory, combinatorics, combinatorial number theory, combinatorial geometry, and algorithm. Topics include linearity of expectation, alterations, second moment, local lemma, correlation inequalities, martingales, Poisson paradigm, and pseudo-randomness. Prerequisites: MATH 7321 and 7331.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7371G. Applied Discrete Mathematics.**

This course introduces fundamental concepts in logic, Boolean algebra, and binomial coefficients; and applications in different fields such as complexity of algorithms and network theory. Prerequisites: MATH 2472 and MATH 4307, all with a grade of "C" or better, or with departmental approval.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7371H. Combinatorial Networks.**

Combinatorial Networks is an area of study of certain types of networks using combinatorial methods extensively. This course introduces fundamental basics as well as the latest development in this area of research. Prerequisite: MATH 5307/7307 with a grade of "C" or higher.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7371I. Advanced Set Theory.**

This course will introduce the basic concepts in set theory research: the axioms of ZFC, ordinals, cardinals, the von Neumann universe, etc. We will cover a selection of advanced topics, such as large cardinals, forcing, and constructibility.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7373. TPCS IN APPLD MATH.**

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7373B. Partial Differential Equations I.**

This course covers the theory and application of partial differential equations, typical equations of mathematical physics, Cauchy problem for equations of the first order, classification of second-order equations, Cauchy problem for second-order hyperbolic equations, Duhamel's principle, potential theory and elliptic equations, maximum principle, and parabolic equations. Prerequisite: MATH 3323, 3373 and 3380 with grades of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7373C. Partial Differential Equations II.**

This course covers the existence and uniqueness theory for boundary value problems of partial differential equations (PDE) including the topics linear evolution equations, variational techniques, non-variational techniques, Hamilton-Jacobi equations, conservation laws. Prerequisite: MATH 7373B with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7373G. Spectral Methods.**

This course covers the essentials of spectral collocation methods with an emphasis on numerically implementing algorithms. The problems studied will include ordinary and partial differential equations connected with fluid mechanics, quantum mechanics, waves, and other fields. The techniques used will include both Fourier and Chebyshev methods. Prerequisite: MATH 7363E with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7375C. Time Series Analysis.**

A study of the theory of time-dependent data. The analysis includes modeling, estimation, and testing; alternating between the time domain; using autoregressive and moving average models and the frequency domain; and using spectral analysis. Prerequisite: MATH 7335.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7375D. Advanced linear Modeling.**

The course provides an extension of regression methodology to more general settings where standard assumptions for ordinary least squares are violated. Topics include generalized least squares, robust regression, bootstrap, regression in the presence of autocorrelated errors, generalized linear models, and logistic and Poisson regression. Prerequisite: MATH 7335.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7378A. Problem Solving, Reasoning, and Proof.**

A study of the fundamental concepts of problem solving, logic, set theory, and mathematical proof and applications of these concepts in mathematics curriculum for grades P-20. Prerequisite: MATH 7306.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7378B. Connecting and Communicating Math.**

This course examines one of the basic principles involved in mathematics education: Connecting and Communicating Mathematics. This fundamental theme will be reviewed, researched, and discussed.

Prerequisite: MATH 7306.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7378C. Students' Mathematical Ideas.**

This course examines the basic principles of students' mathematical thinking. The process of understanding students' fundamental mathematical ideas will be reviewed, researched, and discussed.

Prerequisite: MATH 7306 with a grade of a "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7378D. Math Technologies.**

This course examines the basic principles involved in mathematics education: Technology. This fundamental theme will be reviewed, researched, and discussed. Prerequisite: MATH 7306.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Topics

**Grade Mode:** Standard Letter

**MATH 7378F. Research on Mathematical Problem Solving in Secondary Schools.**

In this course a careful study is made of elementary techniques for problem solving in a variety of domains, including algebra, number theory, combinatorics, geometry, and logic puzzles. Students will learn these techniques by actually working on a collection of problems in each of these areas. Students will read and examine research about various aspects of problem solving and research in math education that includes both teacher training and student learning.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7378G. Discourse Processes, Traditions, and Analysis in Mathematics Education.**

Discourse and discourse analysis have been used to answer research questions across disciplines throughout the humanities and social sciences. This course will focus on theory and methods for the analysis of discourse in mathematical settings. We will learn how different approaches to discourse are used to understand mathematics learning.

Prerequisite: MATH 7306.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7378H. Equity in Mathematics Education.**

Equity in Mathematics Education is a course examining research on equity issues in mathematics education. These equity issues will range from race, culture, class, and gender as they relate to the teaching, learning, and schooling of mathematics education. We will look at how equity is framed within the field of mathematics education, what has been addressed, and what has not been conceptualized. The course will help students understand the literature in the field, critique the extant research literature, design research, and consider important facets of teaching for various student groups. Prerequisite: MATH 7306 with a grade of "C" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**MATH 7385. Independent Study in Mathematics.**

Student will work directly with a faculty member and develop in-depth knowledge in a specific topic area of mathematics. Topics vary according to student's needs and demands. Repeatable with different emphasis.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7386. Independent Study in Mathematics Education.**

Student will work directly with a faculty member and develop in-depth knowledge in a specific topic area of Mathematics Education. Topics vary according to student's needs and demands. Repeatable with different emphasis.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7387. Consulting.**

This course focuses on developing skills in the collaborative practice of mathematics and statistics. This will be done through class discussion, readings, and different projects. Students will learn how to apply mathematics or statistics to solve real-world problems through case studies and collaborative projects. They will also learn how to apply ethical considerations to their professional practice. Taking this course will allow students to gain skills in problem solving and providing consulting services. Prerequisite: MATH 5305 or equivalent with a grade of a "C" or better.

**3 Credit Hours. 2 Lecture Contact Hours. 3 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Credit/No Credit

**MATH 7389. Internship.**

In this course, students will work under the supervision of a faculty member to gain practical knowledge in their field. Student experience can come from industry, government agencies, or other sources but must directly apply to furthering knowledge of applications of mathematics or mathematics education.

**3 Credit Hours. 0 Lecture Contact Hours. 10 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**MATH 7396. Mathematics Education Research Seminar.**

Collaborative research projects with faculty through identifying an educational issue, reviewing literature, creating a research question, designing a methodology, analyzing data, drawing conclusions, implications, and creating a draft of a publishable paper. Prerequisite: MATH 7356, and ED 7352 or MATH 7346, all with a grade of "B" or better.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Credit/No Credit

**MATH 7399A. Dissertation.**

This course represents a Mathematics or Mathematics Education student's dissertation enrollments. The course can be repeated as necessary. The dissertation credit (18 hours) will not be awarded until the dissertation is submitted for binding. Prerequisite: completion of the core and required concentration courses, or approval of student's dissertation advisor.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing

**Grade Mode:** Credit/No Credit

**MATH 7599A. Dissertation.**

This course represents a Mathematics Education student's dissertation enrollments. The course can be repeated as necessary. The dissertation credit (18 hours) will not be awarded until the dissertation is submitted for binding. Prerequisite: completion of the core and required concentration courses, or approval of student's dissertation advisor.

**5 Credit Hours. 5 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Credit/No Credit

**MATH 7699A. Dissertation.**

This course represents a Mathematics Education student's dissertation enrollments. The course can be repeated as necessary. The dissertation credit (18 hours) will not be awarded until the dissertation is submitted for binding. Prerequisite: completion of the core and required concentration courses, or approval of student's dissertation advisor.

**6 Credit Hours. 6 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Credit/No Credit

**MATH 7999A. Dissertation.**

This course represents a Mathematics Education student's dissertation enrollments. The course can be repeated as necessary. The dissertation credit (18 hours) will not be awarded until the dissertation is submitted for binding. Prerequisite: completion of the core and required concentration courses, or approval of student's dissertation advisor.

**9 Credit Hours. 9 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Credit/No Credit

**Reading (RDG)****RDG 7301. Theory and Research of Literacy.**

This course examines the current theories and basic research of literacy development from psychological, cultural, linguistic, educational, and epistemological frameworks.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**RDG 7302. Theory and Research of College Basic Literacy.**

This course examines basic literacy needs and instructional strategies for students within postsecondary institutions. Topics include comparison of basic and academic literacy, research and theory relevant to literacy development in college contexts, analyses of historical and current curricular approaches, and evaluation of instructional strategies and materials.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**RDG 7303. Theory and Research of College Academic Literacy.**

This course examines academic literacy needs and instructional strategies for students in college. Topics include comparisons of academic, workplace, and new literacies and instructional strategies and materials for developing vocabulary, comprehension, and critical and strategic reading in multiple sources of information.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**RDG 7304. Theory and Research of Literacy Instruction for Culturally and Linguistically Diverse Readers.**

This course examines the historical and contemporary understandings of language acquisition and instruction; foundational knowledge of literacy research and cultural and linguistic difference; instructional practices, including culturally responsive instruction, linguistic differences, and creating supportive literacy environments; curriculum, assessment, and evaluation; and critical literacy perspectives. (MULT).

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Multicultural Content

**Grade Mode:** Standard Letter

**RDG 7305. Theory and Research of College Literacy Assessment.**

This course reviews literacy assessment theory, research, policy, and practice in postsecondary contexts. Topics include accountability, standards-based curricula, cultural and linguistic effects, assessment-driven instruction, reliability and validity, interpretation, and different types of instruments (high-stakes, placement, diagnostic, classroom tests, and qualitative instruments).

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**RDG 7306. Literacy Research Seminar.**

This course explores research and policy papers in literacy and literacy education, examines methodology and conclusions, and considers additional research questions.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**RDG 7307D. Multimodal Critical Discourse Studies.**

This course introduces students to multimodal critical discourse analysis as both a theoretical framework stemming from multimodal semiotics and a set of analytic tools for uncovering dominant ideologies in print language and visual representations. Through a survey of critical discourse analysis approaches and methods including transitivity analysis, deixis, multimodal metonymy and metaphor analysis, and visual analysis, students will examine underlying assumptions perpetuated by representations of developmental education from external policy-driving organizations. Additionally, students will explore the potential for developmental educators to harness multimodal representations of their students and practice in order to reclaim the narrative of developmental education.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**RDG 7307E. Theory, Research, and Practice of Disciplinary Literacies.**

This course examines core principles of disciplinary literacies. Students will examine the theory, research, and pedagogical practices of literacies across the disciplines with an emphasis on understanding the potential for postsecondary learners and Developmental Education practices.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**RDG 7307F. Curriculum Design in Developmental Education.**

This course focuses on principles and processes of curriculum design and implementation in developmental education contexts, including examination of emerging research and issues. The course pedagogy also engages students in independent curriculum research, planning, and problem-solving.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Exclude from 3-peat Processing|Topics

**Grade Mode:** Standard Letter

**RDG 7371. Theory and Research of Postsecondary Integrated Reading and Writing.**

This course examines the theory, research, and practice of an integrated reading and writing approach to postsecondary literacy instruction.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**RDG 7372. Theory and Research of New Literacies Studies in Developmental Education.**

This course focuses on the theory and research of New Literacies Studies, which affects instructional practice in postsecondary Developmental Education. It includes an examination of diverse theories and models of multiple digital technology literacies necessary for communicating within the academic and workplace communities of the 21st century.

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Grade Mode:** Standard Letter

**RDG 7373. Community Literacies.**

This course focuses on exploring, understanding, refining, and reflecting on literacy as social practices within a community that informs effective curriculum and instruction for K-16 school settings, adult literacy programs, and informal environments. Students will explore ethnographic research as a means to inform instruction and complete a service learning project. (MULT).

**3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.**

**Course Attribute(s):** Multicultural Content

**Grade Mode:** Standard Letter