Department of Science, Technology, Engineering, and Mathematics (STEM) Education and Professional Studies

Web Site: http://www.odu.edu/stemps

228 Education Building
757-683-4305

The Department of Science, Technology, Engineering and Mathematics (STEM) Education and Professional Studies (STEMPS) is an academic leader in graduate studies related to education specialists, including career and technical education, instructional design and technology, marketing education, science education, mathematics education, technology education, STEM education, community college teaching, and business and industry training. It offers the M.S., M.S.Ed, and the Ph.D. in Education with programs in occupational and technical studies (OTS) and instructional design and technology (IDT). The Ed.S. is offered in conjunction with the educational leadership program. The department also offers licensure and teaching endorsement programs. Due to changing University requirements, national accreditation standards, and Commonwealth licensure regulations, the programs in the Darden College of Education are under constant revision. Any changes resulting from these factors supersede the program requirements described in the catalog. Students should obtain current program information from their advisors and the Darden College of Education website at http://education.odu.edu/.

Individual programs are described on the following pages.

Instructional Design and Technology Programs

- Master of Science in Education - Elementary Education – Instructional Design and Technology
- Master of Science in Education - Secondary Education – Instructional Design and Technology
- Doctor of Philosophy, Education - Instructional Design and Technology Concentration
- Certificate in Education and Training in Modeling and Simulation

Mathematics and Science Education Programs

- Master of Science in Education with Mathematics Education Specialist Endorsement (PK-8)
- Master of Science in Education with Initial Licensure 6-12 - Mathematics
- Mathematics Education Specialist Endorsement (PK-8)
- Master of Science in Education with Initial Licensure - Secondary - Science
- Master of Science in Education for Licensed Teachers - Elementary – Science
- Master of Science in Education for Licensed Teachers - Secondary – Science

Occupational and Technical Studies Programs

- Master of Science - Occupational and Technical Studies, with concentrations in:
  - Business and Industry Training
  - Career and Technical Education Teaching (Available option for Technology Education Licensure)
  - Community College Teaching
- Endorsement Program in Industrial Cooperative Training
- Marketing Teacher Education with Licensure
- Technology Education with Licensure
- Education Specialist - Educational Leadership - Occupational and Technical Studies Concentration
- Doctor of Philosophy - Education - Occupational and Technical Studies Concentration

Master of Science in Education - Elementary Education – Instructional Design and Technology Concentration

Jill Stefaniak, Program Coordinator

In the Master of Science in Education – Elementary-- instructional design and technology concentration, the core and support courses are combined, with students selecting 24 to 30 credits in instructional design and technology along with the problem paper or seminar research option. Working with an assigned advisor, students may take courses in the areas of distance education/telecommunications, instructional design and development, educational applications of instructional technology, and administration of instructional technology.

Admission

Students must:

1. hold a bachelor’s degree from a regionally accredited college/university;
2. have a cumulative undergraduate grade point average of 2.80;
3. take and receive satisfactory scores on either the Graduate Record Examination (score of 290 combined on verbal and quantitative with a minimum of 140 verbal for regular admission) or Miller Analogies Test (minimum score of 45 or 399 for regular admission); and
4. have an interview with the graduate program director or his/her designee.

Performance in classes taken as a non-degree graduate student will not be taken into consideration in the admission process. No courses in the undergraduate academic major or professional education in which the student has made below a C- will be accepted for licensure in the Darden College of Education.

Under certain circumstances, applicants who do not fully meet the requirements for regular admission to the program may be admitted on a provisional basis subject to conditions specified by the graduate program director for elementary/middle education.

Continuance

Students must:

1. maintain a grade point average of 3.00;
2. maintain a grade point average of 3.00 in the major.

All ID&T students are expected to have regular and reliable access to a multimedia computer (headphones, microphone, and web cam) and a high speed internet connection.

Exit

Students must:

1. have a 3.00 grade point average;
2. pass a written comprehensive examination;
3. have an exit interview;
4. have completed all course requirements; and
5. submit an application for graduation.

Program Requirements

All courses in the core and elective blocks are offered via synchronous and asynchronous format.

Paper Option: Area I (24 credits); Area II (6 credits); 30 credits total.
Seminar Option: Area I (30 credits); Area II (6 credits); 36 credits total.
Students must:

Continuance taken into consideration in the admission process.

Performance in classes taken as a non-degree graduate student will not be
considered in the admission process.

In the Master of Science in Education – Secondary Education – Instructional Design and Technology Concentration, students select courses that complement their backgrounds and professional goals.

Admission
Students must:

1. hold a bachelor’s degree from a regionally accredited college/university;
2. have a cumulative undergraduate grade point average of 2.80;
3. take and receive satisfactory scores on either the Graduate Record Examination (score of 290 combined on verbal and quantitative with a minimum of 140 verbal for regular admission) or Miller Analogies Test (minimum score of 45 or 399 for regular admission); and
4. have an interview with the graduate program director or his/her designee.

Performance in classes taken as a non-degree graduate student will not be taken into consideration in the admission process.

Continuance
Students must:

1. maintain a grade point average of 3.00;
2. maintain a grade point average of 3.00 in the major.

The Master of Science in Education – Secondary - instructional design and technology concentration is designed to meet the needs of professionals interested or involved in the design, development, and delivery of instruction. The courses are appropriate for a variety of venues, including preK-12, higher education, military, and business. In this specialization, student’s select 24 to 30 credits in instructional design and technology plus the problems paper or seminar research option. Working with an advisor, students select courses that complement their backgrounds and professional goals.

Program Requirements
All courses in the core and elective blocks are offered via synchronous and asynchronous format.

Area I: Emphasis Courses

<table>
<thead>
<tr>
<th>Introductory Courses</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 617</td>
<td>Foundations of Instructional Technology (*)</td>
</tr>
<tr>
<td>IDT 749</td>
<td>Instructional Systems Design</td>
</tr>
</tbody>
</table>

Elective Courses | 18-24 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 746</td>
<td>Cognition and Instructional Design</td>
</tr>
<tr>
<td>IDT 601</td>
<td>Instructional Design Theory</td>
</tr>
<tr>
<td>IDT 764</td>
<td>Theories and Practice</td>
</tr>
</tbody>
</table>

Design (Select at least three courses)

| IDT 725 | Human Performance Assessment |
| IDT 742 | Task Analysis Methods |
| IDT 748 | Instructional Technology Product Evaluation |
| IDT 761 | Applied Instructional Design |
| IDT 773 | Advanced Instructional Design Techniques |

Technology (Select at least one course)

| IDT 735 | Knowledge Management |
| IDT 751 | Computer-Based Multi-Media Design |
| IDT 752 | Diffusion and Adoption of Instructional Technology Innovations |
| IDT 755 | Theory and Design of Instructional Simulation |
| IDT 756 | Instructional Gaming: Theories and Practice |
| IDT 775 | Designing Online Instruction |

Human Performance Technology (Select at least one course)

| IDT 730 | Principals and Practice of Human Performance Technology |
| IDT 737 | Consulting Skills for Instructional Designers |
| IDT 739 | Needs Analysis and Assessment |

Electives: From above, or from related areas (e.g., Modeling & Simulation, Psychology, Engineering, Speech-communications, Business, I/O Psychology) with approval of advisor and GPD

Area II: Research Core Courses Required

<table>
<thead>
<tr>
<th>Problem Paper Option</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 601</td>
<td>Applied Research Methods in Education</td>
</tr>
<tr>
<td>SEPS 636</td>
<td>Problems in Occupational and Technical Studies</td>
</tr>
</tbody>
</table>

Total Hours | 30-36 |
Doctor of Philosophy - Education – Instructional Design and Technology Concentration

Jill Stefaniak, Program Coordinator

The Doctor of Philosophy in Education Instructional Design and Technology (ID&T) concentration prepares individuals to conduct research and assume leadership roles in the field of instructional technology. Students will master a number of instructional design skills, ranging from instructional problem identification, task and audience analysis, strategy design, assessment, evaluation, and implementation that they can use in a variety of settings including traditional classrooms, distance education, business, health care, military, K-12 and higher education, and government. Courses explore theories and research that provide a foundation for the field. Students are also expected to participate in and conduct research studies as part of their program. Completing the Ph.D. in ID&T will prepare students to take jobs as instructional design and human performance practitioners in business, military, government, health care, and educational settings. They are also prepared to take positions as faculty members in higher education and as researchers for private organizations.

Admission

For admission to this program, individuals should have completed master’s degree in an appropriate discipline from a regionally accredited university. Degrees that are equivalent to a master’s degree such as L.L.B., J.D., and D.D.S. are also acceptable. Prospective students should also have prior course work in statistics and instructional technology. If this requirement is not met, then additional course work may be added to the candidate’s graduate program of study at the discretion of the advisor and graduate program director. Please see prerequisites on the curriculum description for specifics.

Admission to the instructional design and technology Ph.D. program is competitive. A number of criteria are considered including graduate and undergraduate GPAs, GRE scores, writing ability, a personal interview, and the match between student interests and faculty expertise. Meeting the minimum requirements established by the department does not ensure admission to the program. A minimum undergraduate GPA of 2.8 and a minimum graduate GPA of 3.25 are recommended.

Application requirements for the Ph.D. in instructional design and technology are as follows:

1. a completed application which is available online or from the Office of Graduate Admissions.
2. Official transcripts of all undergraduate and graduate courses and degrees completed.
3. Official report scores from the Graduate Record Examination (verbal, quantitative, and analytical) taken within the last five years. GRE scores expire after five years; however, candidates who have completed the exam prior to five years before the application deadline may submit those scores for consideration if they are provided from an official source such as a transcript or form provided by the Educational Testing Service. Old Dominion University reserves the right to determine what is an “official source.”
4. Applicants whose native language is not English (or who do not have a B.S. or M.S. degree from an accredited institution in a country where English is the native language) must submit a current score for the Test of English as a Foreign Language (TOEFL) of at least 600 (written) or 250 (computer based).
5. Applicants must submit a 500 word statement of their academic and professional goals with an emphasis on how the Ph.D. degree in instructional design and technology will contribute to the achievement of the stated goals.
6. Three letters of reference from sources capable of commenting on the applicant’s readiness for advanced graduate study. It is recommended that at least two of the letters come from university faculty members. Other letters may come from work supervisors or managers.
7. An interview with the instructional design and technology program faculty. This committee will also review applications for admission.

Program Requirements

The Ph.D. program in Education with a concentration in instructional design and technology is comprised of courses totaling a minimum of 60 academic credit hours beyond the master’s degree. The curriculum includes an program core of 21 credit hours, 9 credit hours in the instructional design concentration, and a research core of 15 credit hours, the three credit dissertation seminar and the dissertation, which will include a minimum of 12 credit hours. The dissertation will often include more than 12 credit hours depending on the length of time necessary for completion. Students entering the program may also need to complete introductory statistics courses and an instructional technology foundations course if they have not had equivalent courses or cannot demonstrate competency at a satisfactory level. Students who enter the Ph.D. program with a master’s degree in an academic field that is unrelated to instructional design and technology and/or who have not completed courses to develop competency in specified areas may need to complete these courses in addition to the required courses. All courses are offered through distance learning. All students must complete the research residency project (IDT 879 and IDT 898) that results in a submission for publication or presentation to a nationally refereed journal or conference prior to taking comprehensive exams. The residency project must be completed within two years of the start of IDT 879. If not, the student must repeat IDT 879 without credit.

All IDT students are expected to have regular and reliable access to a multimedia computer (headphones, microphone, and web cam) and a high speed internet connection.

Under normal circumstances, admissions will be offered at least three times a year for the fall, spring, and summer semesters. Acceptance is competitive to assure that there is an adequate number of full-time faculty to serve the students through advising, mentoring, and other duties, particularly when individuals reach the dissertation stage of the program.

Students interested in attending full-time and applying for financial aid should submit their applications by February 1 prior to the fall semester they wish to start.

Applicants must submit completed applications and all related material no later than the following dates:

- May 1st for the Fall Semester
- November 1st for the Spring Semester
- March 1st for the Summer Semester

Program Continuance

After completing 12 hours in ID&T course work, students must maintain a 3.25 GPA in ID&T courses. Failure to do so will result in one year probation. If the student’s GPA in ID&T courses is less than 3.25 at the end of the probation period, the student will be suspended. Students who earn a grade of C+ or lower (including U) in a graduate course in their program of study are considered to be making unsatisfactory progress. Students earning one or more grades of C+ or lower must meet with the program director prior to enrolling in courses in future semesters. Students must provide a plan for making satisfactory progress or they will be suspended. If a student earns three or more grades of C+ or lower, they will be suspended from the program. Students wishing to be considered for reinstatement must follow the procedures set forth in the ODU Graduate Catalog.

In addition, the ODU Graduate Catalog states students who have less than a 3.0 GPA on courses at ODU will be placed on probation and may be suspended if conditions prescribed in the catalog are not met.

Continuous Enrollment and Exams

Doctoral students who do not meet the conditions for continuous enrollment and who do not have an approved leave of absence will be suspended from the degree program. Doctoral students who fail the comprehensive exam (either oral or written) or the doctoral final examination (e.g., dissertation defense) twice will be suspended from the degree program.
Satisfactory Progress

Doctoral students who do not complete at least 12 hours of course credits towards their degree each year with a grade of B- or higher prior to candidacy will be evaluated for continuation in the program. If the program faculty do not feel the student is making adequate progress, the student will be placed on program probation for one year. If the student has not completed 12 hours of course credits toward the degree with a grade of B- or higher, they will be suspended.

Research Residency and Dissertation

Doctoral students will be evaluated annually for their progress in completing their research residency or dissertation. Students who have not made progress towards the completion as demonstrated evidence of a finished proposal, data collection, data analysis, or drafts of the manuscript/dissertation will be evaluated by faculty for continuance in the program. If faculty feel the student has not made adequate progress, the student will be placed on probation for one year. If the student has not made adequate progress after one year of probation, faculty may recommend suspension from the program for failing to make adequate progress towards completion of the degree.

Plagiarism

Any student found guilty of plagiarism will be suspended immediately from the program.

Program Completion and Exit

To complete the program students must fully comply with the curriculum below and all requirements noted elsewhere in the University catalog for graduate students and within the Ph.D. in Education Handbook. It is the responsibility of the student to obtain these materials and complete required portions.

Curriculum

Prerequisites: All students admitted into the Ph.D. in instructional design and technology must complete the following prerequisite courses unless they have previously completed equivalent graduate level coursework or have appropriate educational experience.

Prerequisites*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUN 722</td>
<td>Introduction to Applied Statistics and Data Analysis</td>
</tr>
<tr>
<td>IDT 617</td>
<td>Foundations of Instructional Technology</td>
</tr>
</tbody>
</table>

ID&T Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 730/830</td>
<td>Principals and Practice of Human Performance Technology</td>
</tr>
<tr>
<td>IDT 751/851</td>
<td>Computer-Based Multi-Media Design</td>
</tr>
<tr>
<td>IDT 760/860</td>
<td>Cognition and Instructional Design</td>
</tr>
<tr>
<td>IDT 773/873</td>
<td>Advanced Instructional Design Techniques</td>
</tr>
<tr>
<td>IDT 801</td>
<td>Instructional Design and Technology Seminar</td>
</tr>
<tr>
<td>IDT 810</td>
<td>Trends and Issues in Instructional Design and Technology</td>
</tr>
<tr>
<td>IDT 849</td>
<td>Instructional Systems Design</td>
</tr>
</tbody>
</table>

Research Core

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUN 812</td>
<td>Research Design and Analysis</td>
</tr>
<tr>
<td>FOUN 814</td>
<td>Qualitative Research Design in Education</td>
</tr>
<tr>
<td>FOUN 823</td>
<td>Analysis of Variance Applied to Educational Research</td>
</tr>
<tr>
<td>IDT 725/825</td>
<td>Human Performance Assessment</td>
</tr>
<tr>
<td>IDT 879</td>
<td>Research Residency in Instructional Design and Technology</td>
</tr>
</tbody>
</table>

Instructional Design Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 742/842</td>
<td>Task Analysis Methods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 746/846</td>
<td>Foundations of Distance Education</td>
</tr>
<tr>
<td>IDT 748/848</td>
<td>Instructional Technology Product Evaluation</td>
</tr>
<tr>
<td>IDT 761/861</td>
<td>Applied Instructional Design</td>
</tr>
<tr>
<td>IDT 763</td>
<td>Instructional Design Theory (IDT 863)</td>
</tr>
<tr>
<td>IDT 764/864</td>
<td>Theories and Research</td>
</tr>
<tr>
<td>IDT 898</td>
<td>Research Residency II</td>
</tr>
</tbody>
</table>

Technology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 715/815</td>
<td>Management of Technology Resources in the Classroom</td>
</tr>
<tr>
<td>IDT 752/852</td>
<td>Diffusion and Adoption of Instructional Technology Innovations</td>
</tr>
<tr>
<td>IDT 755/855</td>
<td>Theory and Design of Instructional Simulation</td>
</tr>
<tr>
<td>IDT 756/856</td>
<td>Instructional Gaming: Theories and Practice</td>
</tr>
<tr>
<td>IDT 775/875</td>
<td>Designing Online Instruction</td>
</tr>
<tr>
<td>TLCI 735/835</td>
<td>Researching with Children: Contemporary Perspectives on the Child in Research</td>
</tr>
</tbody>
</table>

Human Performance Technology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 735/835</td>
<td>Knowledge Management</td>
</tr>
<tr>
<td>IDT 737/837</td>
<td>Consulting Skills for Instructional Designers</td>
</tr>
<tr>
<td>IDT 739/839</td>
<td>Needs Analysis and Assessment</td>
</tr>
</tbody>
</table>

Electives **

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUN 881</td>
<td>Dissertation Seminar ***</td>
</tr>
<tr>
<td>SEPS 899</td>
<td>Dissertation in Occupational Education</td>
</tr>
</tbody>
</table>

Total Hours 45

* All students admitted into the Ph.D. program in instructional design and technology must complete the prerequisite courses unless they have previously completed equivalent graduate level coursework or have appropriate educational experience.

** Electives are chosen from the list above, or from related areas, e.g., modeling & simulation, psychology, engineering, speech-communications, business, I/O psychology.

*** If seminar is waived by the doctoral committee, the credits are added to the content.

Additional courses or substitutions may be used as approved by student’s advisory committee.

Education and Training Emphasis in Modeling & Simulation Certificate

Jill Stefaniak, Program Coordinator

The College of Education offers a certificate in Modeling &Simulation through the Instructional Design and Technology program, a graduate-level program that is part of the STEM Education and Professional Studies Department.

Simulation and gaming are used extensively as teaching tools and training environments in a variety of education and training applications. The certificate provides the student with a fundamental understanding of modeling and simulation techniques coupled with targeted coursework in the design and use of simulation and gaming technologies for instructional settings. This certificate was the first of its kind in the U.S. and is a natural concentration area in instructional design and technology given the widespread use of simulation and gaming as instructional tools in Pre-K-12 education, colleges, universities, and corporate and military training programs. This certificate is one of several such certificate programs offered as part of the M&S strategic plan of Virginia Modeling, Analysis and Simulation Center (VMASC) and ODU.

The Modeling and Simulation Certificate Program consists of a minimum of four, three credit graduate courses. Courses include:
For more information about the Master of Science in Engineering modeling and simulation concentration, refer to the Catalog section for the Batten College of Engineering and Technology.

**Master of Science in Education - Elementary Education - with Mathematics Education Specialist Endorsement (PK-8)**

Mary Enderson, Program Coordinator

This graduate program leads to a Master’s of Science in Education degree. Elementary major, with the Mathematics Specialist (PK-8) endorsement. This program is offered in partnership with the Department of Mathematics and Statistics in the College of Sciences.

**Admission**

Candidates must:

- Have 3 years of successful classroom experience in teaching mathematics;
- Hold a bachelor’s degree from a regionally accredited college/university;
- Hold the Virginia Collegiate Professional License or an equivalent license from another state;
- Have an undergraduate grade point average of 2.80 and an average of 3.00 in the major;
- Achieve a satisfactory score (as established by the Department of Educational Curriculum and Instruction) on the Graduate Record Examination or the Miller Analogies Test; and
- Submit an application for graduate studies.

Performance in classes taken as a non-degree student will not be taken into consideration in the admission process. Under certain circumstances, applicants who do not fully meet the requirements for regular admission to the program may be admitted on a provisional basis subject to conditions specified by the graduate director for the program.

**Continuance**

Candidates must maintain a grade point average of 3.00.

**Exit**

Candidates must:

- Have a 3.00 grade point average;
- Have completed all course requirements;
- Have completed a professional learning portfolio; and
- Submit an application for graduation.

**Curriculum**

A minimum of 33 semester credits are required. The courses for completion of the degree program are listed below:

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSIM 601</td>
<td>Introduction to Modeling and Simulation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Elective Courses</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 755/855</td>
<td>Theory and Design of Instructional Simulation</td>
</tr>
<tr>
<td>IDT 756/856</td>
<td>Instructional Gaming: Theories and Practice</td>
</tr>
<tr>
<td>SEPS 750/850</td>
<td>Trends and Issues in Training: Modeling and Simulation</td>
</tr>
</tbody>
</table>

| Total Hours | 12 |

**Mathematics Content**

<table>
<thead>
<tr>
<th>Mathematics Content</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM 662</td>
<td>Mathematical Assessment for Data Driven Decisions</td>
</tr>
<tr>
<td>STEM 668</td>
<td>Internship for Mathematics Specialist</td>
</tr>
</tbody>
</table>

| Other courses may be taken with permission from the Graduate Program Director. |

| Total Hours | 33 |

**Master of Science in Education with Initial Licensure 6-12 - Mathematics**

There are a number of individuals who have earned B.S. or B.A. degrees who now want to obtain a master’s degree leading to licensure as a secondary school teacher. In the program, students complete (or have completed) a minimum of 32 credits of undergraduate courses in one endorsement area (mathematics) and an additional 31-34 credits of education courses at the graduate level.

Students seeking this degree need to apply through the Department of Teaching and Learning.

**Master of Science in Education with Initial Licensure 6-12 - Science**

There are a number of individuals who have earned B.S. or B.A. degrees who now want to obtain a master’s degree leading to licensure as a secondary school teacher. In the program, students complete (or have completed) a minimum of 32 credits of undergraduate courses in one endorsement area (earth science, chemistry, biology, or physics) and an additional 31-34 credits of education courses at the graduate level.

Students seeking this degree need to apply through the Department of Teaching and Learning.

**Mathematics Education Specialist Endorsement (PK-8)**

This endorsement program leads to a Mathematics Specialist (PK-8) endorsement for individuals with a current Virginia license and a master’s degree related to teaching elementary or middle school mathematics. This program is offered in partnership with the Department of Mathematics and Statistics in the College of Sciences.

**Admission**

Candidates must:

- Have 3 years of successful classroom experience in teaching mathematics;
- Hold a bachelor's degree from a regionally accredited college/university;
- Hold the Virginia Collegiate Professional License or an equivalent license from another state.

<table>
<thead>
<tr>
<th>Total Hours</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM 651</td>
<td>Differentiation of Mathematics Instruction for Diverse Student Populations</td>
</tr>
<tr>
<td>STEM 660</td>
<td>Action Research for Mathematics Specialists</td>
</tr>
<tr>
<td>STEM 661</td>
<td>Mathematics Specialists as Teacher Leaders</td>
</tr>
</tbody>
</table>
• Have an undergraduate grade point average of 2.80 and an average of 3.00 in the major;
• Achieve a satisfactory score (as established by the Department of Teaching and Learning) on the Graduate Record Examination or the Miller Analogies Test; and
• Submit an application for graduate studies.

Performance in classes taken as a non-degree student will not be taken into consideration in the admission process. Under certain circumstances, applicants who do not fully meet the requirements for regular admission to the program may be admitted on a provisional basis subject to conditions specified by the graduate director for the program.

**Continuance**
Candidates must maintain a grade point average of 3.00.

**Exit**
Candidates must:
• Have a 3.00 grade point average;
• Have completed all course requirements;
• Have completed a professional learning portfolio; and
• Submit an application for graduation.

**Curriculum**
A minimum of 21 semester credits are required. The courses for completion of the endorsement program are:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAPD 601</td>
<td>Number and Operations for PK-8 Mathematics Specialists</td>
<td>3</td>
</tr>
<tr>
<td>MAPD 602</td>
<td>Geometry and Measurement for PK-8 Mathematics Specialists</td>
<td>3</td>
</tr>
<tr>
<td>MAPD 603</td>
<td>Rational Numbers and Proportional Reasoning for PK-8 Mathematics Specialists</td>
<td>3</td>
</tr>
<tr>
<td>MAPD 604</td>
<td>Probability and Statistics for PK-8 Mathematics Specialists</td>
<td>3</td>
</tr>
<tr>
<td>MAPD 605</td>
<td>Algebra and Functions for PK-8 Mathematics Specialists</td>
<td>3</td>
</tr>
<tr>
<td>STEM 661</td>
<td>Mathematics Specialists as Teacher Leaders</td>
<td>3</td>
</tr>
<tr>
<td>STEM 668</td>
<td>Internship for Mathematics Specialist</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

**Master of Science - Occupational and Technical Studies**
Philip Reed, Graduate Program Director

This is an advanced master’s degree and requires prior academic work associated with this area of study. The M.S. occupational and technical studies program has four concentrations - career and technical education, business and industry training, community college teaching, and STEM education. These studies are designed to help teachers and trainers upgrade their knowledge and skills and prepare for leadership roles in education and training. These programs are all delivered at the Norfolk campus and through the University’s distance learning system.

For Licensure to teach K6-12 in Marketing Education and Technology Education please consult with Graduate Program Director.

**Admission**
Students are admitted to the program on a continuing basis. Applications can be obtained from the Admissions Office, distance learning sites, the department and online. Students are admitted for fall, spring, and summer on a rolling basis. Graduate students can complete up to 12 graduate hours with a non-degree application. All applicants to the Master of Science degree in occupational and technical studies must meet University, college, and department requirements. In addition, all applicants must:

1. hold an undergraduate degree in a related field or have work experience in an occupational/technical area,
2. have an overall grade point average of 2.80 with a 3.00 in major courses,
3. complete the Graduate Record Examination (GRE) or the Miller Analogy Test and
4. submit two letters of recommendation.
5. submit a 500 word essay on how earning a M.S. in Occupational and Technical Studies contributes to the achievement of career goals.

**Continuance**
Students must:
1. maintain a minimum grade point average of 3.00.

**Exit**
Students in the career and technical education, business and industry training, and STEM education concentrations must complete 33 semester hours and students in the community college teaching concentration must complete 39 semester hours, as distributed in the M.S. curriculum. In addition, all students must:

1. achieve an overall grade point average of 3.00;
2. complete all competencies listed on course syllabi;
3. pass the written comprehensive examination; and
4. successfully complete a problems paper or thesis.

**Curriculum (33-39)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEPS 785</td>
<td>Curriculum Development in Occupational Education and Training</td>
</tr>
<tr>
<td>SEPS 788</td>
<td>Instructional Strategies for Innovation in Training and Occupational Education</td>
</tr>
<tr>
<td>SEPS 789</td>
<td>Instructional Technology in Education and Training</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Concentration Specific Courses**
Select one specialization from the following:

**Career and Technical Education Teaching**
SEPS 760 Trends and Issues in Occupational Education
SEPS 762 Administration and Management of Education and Training Programs

**Business and Industry Training**
SEPS 761 Foundations of Adult Education and Training
SEPS 762 Administration and Management of Education and Training Programs

**Community College Teaching**
SEPS 760 Trends and Issues in Occupational Education
SEPS 761 Foundations of Adult Education and Training

**STEM Education**
STEM 720 STEM Educational Foundations
STEM 721 Science, Technology, Engineering, and Mathematics Connection and Integration

**Research Core**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUN 612</td>
<td>Applied Research Methods in Education</td>
</tr>
<tr>
<td>SEPS 636</td>
<td>Problems in Occupational and Technical Studies</td>
</tr>
<tr>
<td>or SEPS 698</td>
<td>Thesis in Occupational Education</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Professional Technical Speciality**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career and Technical Education (12 credits)</td>
<td>*</td>
</tr>
<tr>
<td>Business and Industry Training (12 credits)</td>
<td>*</td>
</tr>
<tr>
<td>Community College Teaching (18 credits)</td>
<td>**</td>
</tr>
<tr>
<td>STEM Education (12 credits)</td>
<td></td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td></td>
</tr>
</tbody>
</table>

Department of Science, Technology, Engineering, and Mathematics (STEM) Education and Professional Studies
Doctor of Philosophy - Education – Occupational and Technical Studies Concentration

Philip Reed, Graduate Program Director

The Ph.D. in Education, occupational and technical studies concentration has three emphases: technology education, career and technical education, and human resources - training. The Ph.D. is delivered on campus and through the University’s distance learning system. All students must be on the Norfolk campus for two, two-week summer Institute sessions. The focus of the degree is to prepare university faculty, directors/supervisors of career and technical education, and directors of training departments in business, industry, and government.

The curriculum associated with Old Dominion University’s Ph.D. in Education, occupational and technical studies concentration is intended to accomplish the following learning outcomes:

- Individuals will apply knowledge, skills, and behaviors in today’s complex educational and business environments.
- Every individual who completes this doctoral program, regardless of his/her concentration emphasis, will develop competencies for understanding and using research methods and statistics to make data-based driven decisions.
- The concentration emphasis will offer courses that enable graduates to know and apply their knowledge in today’s complex educational, business, or industry environments and emerge as leaders in their chosen careers.

Note for students concerning the Doctor of Philosophy in Education - Occupational and Technical Studies concentration: This program is not intended to lead to teacher certification or school leadership licensure. Teachers are advised to contact their individual school districts as to whether this program may qualify for teacher advancement.

Admission

Students may enroll in this program full- or part-time. The program faculty reviews all applicants as their application packages are completed. The following criteria are used for admittance:

1. graduate grade point average;
2. undergraduate grade point average;
3. Graduate Record Examination;
4. essay, 1500 word; and
5. goodness of fit with program goals, faculty expertise, and supporting references.

Graduate assistantships and fellowships may be available. Contact the graduate program director for information.

Exit

Students must:

1. complete a minimum of 60 credit hours beyond the master’s degree;
2. complete all competencies listed on course syllabi;
3. achieve an overall grade point average of 3.00;
4. pass the written and oral comprehensive examination;
5. select a dissertation committee;
6. prepare and defend a dissertation prospectus;
7. successfully complete a dissertation with an oral defense; and
8. complete the graduate student University assessment.

Prerequisites

A master’s degree in an appropriate field related to this concentration is required for admission to the Ph.D. program. Students who do not have equivalent coursework or appropriate educational experiences must complete the following prerequisite courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUN 612</td>
<td>Applied Research Methods in Education</td>
<td>3</td>
</tr>
<tr>
<td>FOUN 722</td>
<td>Introduction to Applied Statistics and Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SEPS 785</td>
<td>Curriculum Development in Occupational Education and Training</td>
<td>3</td>
</tr>
<tr>
<td>SEPS 788</td>
<td>Instructional Strategies for Innovation in Training and Occupational Education</td>
<td>3</td>
</tr>
<tr>
<td>SEPS 789</td>
<td>Instructional Technology in Education and Training</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Hours 15

Curriculum (60 credits minimum)

Students in the occupational and technical studies concentration complete courses in research, core courses in occupational and technical studies concentration, and an emphasis in either career and technical education, human resources-training, or technology education, and 6 credit hours of electives.

Research Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEPS 835</td>
<td>Research Design for Occupational and Technical Studies</td>
<td></td>
</tr>
<tr>
<td>FOUN 812</td>
<td>Research Design and Analysis</td>
<td></td>
</tr>
<tr>
<td>FOUN 814</td>
<td>Qualitative Research Design in Education</td>
<td></td>
</tr>
<tr>
<td>FOUN 822</td>
<td>Applied Linear Models in Educational Research</td>
<td></td>
</tr>
</tbody>
</table>
Admission

Students may enroll in this teaching endorsement program as a non-degree student. If an M.S. degree is sought, some graduate level courses may be applied toward professional technical studies in this component of the degree. Admission should be sought into the M.S. program in occupational and technical studies with a concentration in career and technical education teaching. Graduate students can complete up to 12 graduate hours with a non-degree application. Students should contact the program coordinator to discuss admissions options. Prior to entering this program, students must have or qualify for a Virginia Collegiate Professional or Postgraduate Professional License. Secondly, they must be interviewed and accepted by the program coordinator.

Continuance and Exit

Students must:

1. complete the following courses:
   - SEPS 401/501 Foundations of Career and Technical Education
   - SEPS 788 Instructional Strategies for Innovation in Training and Occupational Education
   - SEPS 508 Advanced Classroom Issues and Practices in Career and Technical Education
   - SEPS 408/508 Advanced Classroom Issues and Practices in Career and Technical Education
   - SEPS 450/550 Assessment, Evaluation and Improvement
   - SEPS 400 Instructional Systems Development
   - STEM 305 Curriculum for Technology Education
   - STEM 306 Methods for Technology Education
   - SEPS 503 Methods in Career and Technical Education

   Total Hours: 27

2. earn a 2.75 cumulative grade point average if licensure is at the undergraduate level and a 3.00 cumulative grade point average if licensure is at the graduate level; and

3. document at least 4000 clock hours of acceptable employment in a trade, technical, or industrial education subject area completed within the past five years.

Twelve hours of 500/600 level courses may be applied toward the Master of Science in occupational and technical studies, career and technical education teaching concentration.

Marketing Teacher Education with Initial Licensure

Michael F. Kosloski, Program Coordinator

The post-baccalaureate endorsement in marketing education is designed to prepare a person who has a baccalaureate degree to be a marketing education teacher-coordinator. Participants who successfully complete this program will qualify to apply for a Virginia teaching license to teach marketing education.

Admission

For those students seeking licensure only, they must first apply to ODU as non-degree seeking. Students subsequently complete undergraduate or graduate level courses that meet Virginia licensure requirements. For students simultaneously seeking a graduate degree, they should apply for the graduate program and may take up to 12 credit hours that may be used toward both the M.S. and post-baccalaureate programs. Students should schedule an interview with the program coordinator for program admissions as well as to discuss course evaluation and options.

Continuance and Exit

Students must:

1. complete the following courses:
   - SEPS 297 Observation and Participation
   - SEPS 400/500 Instructional Systems Development
   - SEPS 401/501 Foundations of Career and Technical Education
   - SEPS 402 Instructional Methods in Occupational Studies
   - SEPS 408/508 Advanced Classroom Issues and Practices in Career and Technical Education

   Total Hours: 10

Department of Science, Technology, Engineering, and Mathematics (STEM) Education and Professional Studies
Students must:

Continuance and Exit

To be admitted to the Ed.S. program, an applicant must:

1. Hold a master’s degree in career and technical education or related field;
2. Have a successful experience as an administrator or teacher;
3. Hold a teaching license or equivalent; and
4. Have taken ELS 600 or its equivalent as a prerequisite.

Students seeking this degree need to apply through the Ed.S. program in the Department of Educational Leadership and Counseling.

Entrance

Students must:

1. meet all University requirements,
2. provide two letters of recommendation;
3. hold a master’s degree from an accredited institution (minimum 3.25 graduate grade point average),
4. provide a one-page essay explaining why he/she should be admitted to the program; and
5. have an acceptable score on the GRE or Miller Analogies Test.

Continuance

Students must successfully complete:

Exit

Students must meet all University requirements and maintain a 3.00 or higher grade point average.
1. a written comprehensive examination,
2. the required course of study,
3. have a 3.00 grade point average or above, and
4. complete a university graduate student assessment.

**Curriculum (33 credits)**

Requirements for the Ed.S. with a specialty in occupational and technical studies include 30-33 semester hours (18 hours must be completed in 800-level courses in ELS), as follows:

<table>
<thead>
<tr>
<th>Prerequisites *</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELS 610 School Community Relations and Politics</td>
<td>3</td>
</tr>
<tr>
<td>ELS 621 Curriculum Development and Assessment</td>
<td>3</td>
</tr>
<tr>
<td>ELS 657 Public School Law</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

**Educational Leadership**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELS 753 Educational Finance and Budgeting</td>
<td>3</td>
</tr>
<tr>
<td>ELS 854 Human Resource Development and</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
</tr>
<tr>
<td>ELS 871 Educational Systems Planning and</td>
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</tr>
<tr>
<td>Futures</td>
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<tr>
<td>ELS 876 Leadership for Social Justice</td>
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<tr>
<td>ELS 878 Leadership for Teaching and Learning</td>
<td></td>
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<tr>
<td>ELS 879 Field Research in School</td>
<td></td>
</tr>
<tr>
<td>Administration and Supervision</td>
<td></td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>18</strong></td>
</tr>
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</table>

**Occupational and Technical Studies**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEPS 860 Trends and Issues in</td>
<td></td>
</tr>
<tr>
<td>Occupational Education</td>
<td></td>
</tr>
<tr>
<td>SEPS 862 Administration and Management of</td>
<td></td>
</tr>
<tr>
<td>Education and Training Programs</td>
<td></td>
</tr>
<tr>
<td>SEPS 885 Curriculum Development in</td>
<td></td>
</tr>
<tr>
<td>Occupational Education and Training</td>
<td></td>
</tr>
<tr>
<td>SEPS 888 Instructional Strategies for</td>
<td></td>
</tr>
<tr>
<td>Innovation in Training and Occupational</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
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<tr>
<td>SEPS 889 Instructional Technology in</td>
<td></td>
</tr>
<tr>
<td>Education and Training **</td>
<td></td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

* ELS 610, ELS 621, and ELS 657 are prerequisites for the principalship endorsement.
** And/or other courses approved by the candidate's advisor.

**INSTRUCTIONAL DESIGN AND TECHNOLOGY Courses**

**IDT 575. Web Development for Educators. 3 Credits.**

Lecture 3 hours; 3 credits. Prerequisite: ELS 621. Provides both a conceptual framework and hands-on experience in the design and development of online web resources for educators. The course introduces the student to the various uses and features of online tools and technologies, investigates online learning strategies, and explores best practices in the use of the web to enhance learning. Topics include fundamentals of web authoring: screen design, use of web page creation tools, and functional use of HTML and derivatives.

**IDT 576. Foundations of Instructional Technology, 3 Credits.**

Lecture 3 hours; 3 credits. Required introductory overview to the field of instructional technology. Topics include a history of the field, basic instructional design, generally accepted theoretical practices and major formats of instructional media. Emphasis is given to instructional technology trends as applied to various industries, including K-12, military, industry training, and others.

**IDT 647. ONLINE LEARNING. 3 Credits.**

**IDT 715. Management of Technology Resources in the Classroom. 3 Credits.**

Lecture, 3 hours. 3 credits. Surveys computing technology with a focus on management in educational contexts. Implementation, integration and resourcing will be covered.

**IDT 725. Human Performance Assessment. 3 Credits.**

Lecture, 3 hours. 3 credits. Prerequisite: FOUN 722 or equivalent. This course focuses on the theory, design, and evaluation of measurement instruments used to assess individual knowledge, performance, and attitudes. Topics include fundamentals of measurement, reliability, validity, and instrument selection, construction, and use. Students will develop and evaluate instruments for instructional and research purposes.

**IDT 730. Principals and Practice of Human Performance Technology. 3 Credits.**

Lecture 3 hours. 3 credits. This course explores both the principles and practices of human performance technology, with roughly equal emphasis on both. Students will learn what HPT is, how it's applied in practice, and how and why instructional designers need to know about it. Particular emphasis is given to determining whether or not problems are best amenable to instructional solutions.

**IDT 735. Knowledge Management. 3 Credits.**

Lecture, 3 hours. 3 credits. This seminar focuses on what knowledge management is and how and why knowledge management is relevant for instructional designers. Emphasis is placed on theoretical approaches to knowledge management, though we will touch upon the design of knowledge management systems.

**IDT 737. Consulting Skills for Instructional Designers. 3 Credits.**

Lecture, 3 hours. 3 credits. This project-based course is designed to develop and enhance the ability of instructional designers to work as partners and consultants to clients and superiors. The focus is on consulting skills per se, and not any particular content. All students will be required to do an individual consulting project, supervised by the instructor.

**IDT 739. Needs Analysis and Assessment. 3 Credits.**

Lecture, 3 hours. 3 credits. This project-based class will focus on the process of doing a needs analysis and assessment, from start to finish. Although theoretical considerations regarding needs analyses will be explored, the emphasis is on actually conducting the analysis. Students will work in teams under the supervision of the instructor to conduct a needs analysis for an external client.

**IDT 742. Task Analysis Methods. 3 Credits.**

Lecture, 3 hours; 3 credits. This project-based course examines several different task analysis methodologies. Major methodologies common in the field will be explored as a class, and students will also be required to familiarize themselves with other methodologies of their choice. Emphasis will be on practical application of the methodologies, especially as regards instructional products or systems.

**IDT 746. Foundations of Distance Education. 3 Credits.**

Lecture 3 hours; 3 credits. An analysis of the trends, issues, and theories of distance education in education, business, and military applications. Students will examine various distance education systems, policies and lessons from different perspectives.

**IDT 748. Instructional Technology Product Evaluation. 3 Credits.**

Provides an overview to the science of evaluation, both as a general field and as applied to instruction. Topics will include evaluating the effectiveness of learning technologies; building survey instruments; online and computer-assisted testing; reporting practices; as well as formative, summative program and performance evaluation and assessment. The unique demands of evaluating mediated education and learning environments will be considered. Prerequisites: IDT 749 and IDT 849.
IDT 749. Instructional Systems Design. 3 Credits.
Lecture 3 hours; 3 credits. Students will gain hands-on experience applying a theoretical understanding of instructional design and development to actual projects. Students will learn and use the Instructional Systems Design Process from initial learner profile analysis to design and development through to evaluation. Students will work individually and in teams to gain experience similar to real-world instructional design situations. Students will master the fundamental practices upon which the instructional design process is based.

IDT 751. Computer-Based Multi-Media Design. 3 Credits.
This course covers the theory, design, and evaluation of computer-based multimedia instruction. Students will demonstrate a thorough understanding of instructional theory and design strategies for computer-based drills, tutorials, hypermedia, simulations, games, tools, open-ended learning environments, tests, and web-based instruction. Class projects will center on the design and development of instruction utilizing at least two of these methodologies. Prerequisites: IDT 749 and IDT 849.

IDT 752. Diffusion and Adoption of Instructional Technology Innovations. 3 Credits.
Lecture 3 hours; 3 credits. This course will explore theories, research, and strategies related to the diffusion and adoption of instructional technology innovations in education and training. The course will explore why and how individuals, groups, and organizations adopt or fail to adopt an innovation or change.

IDT 755. Theory and Design of Instructional Simulation. 3 Credits.
Lecture 3 hours; 3 credits. This course focuses on learning theory, design and evaluation of instructional simulations and simulators. Topics include history, instructional design, validation, and integration of instructional simulations.

IDT 756. Instructional Gaming: Theories and Practice. 3 Credits.
Lecture 3 hours; 3 credits. Provides both a conceptual framework and experience in the design and development of instructional games. The course introduces the student to the history, research, theory, and practice of instructional games. Topics include discussions of relevant learning theories associated with instructional gaming, analysis and design of games and current research in instructional gaming.

IDT 760. Cognition and Instructional Design. 3 Credits.
Lecture 3 hours; 3 credits. Students will be introduced to the theoretical frameworks that form the basis of instructional systems theory and design. Focus will be on learning theories, instructional psychology, and instructional system theory. Recent developments in cognition, learning and instruction for educators will also be considered. Topics include perspectives of behaviorism, social-historical constructivism, cognitive science, situated cognition, and cultural influences on cognition.

IDT 761. Applied Instructional Design. 3 Credits.
Problem-based course in which students gain experience applying knowledge from IDT 749/849 to real-world instructional and instructional technology problems. Project work is individual, paired, and in teams. Students demonstrate mastery of the instructional design and development process through production of tools, technologies, media or materials that successfully resolve an instructional problem. Focus is on rapid prototyping model. Prerequisites: IDT 749 and IDT 849.

IDT 763. Instructional Design Theory. 3 Credits.
Lecture 3 hours; 3 credits. Students will investigate traditional and contemporary instructional design theories and models. Behavioral, cognitive, generative, problem-based learning, and constructivist theories as well as cognitive hierarchies will be examined, compared, contrasted and applied to various instructional situations.

IDT 764. Theories and Research. 3 Credits.
Lecture 3 hours, 3 credits. This course is a study of the application of perceptual and learning principles to the design of instructional media for use in educational and training applications. The focus is on the development and application of heuristics from the research literature. We will examine verbal and iconic signs as well as visual imagery, and their role in the instructional and learning processes.

IDT 773. Advanced Instructional Design Techniques. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: IDT 749/849. Exploration and application of theories, tools and competencies characteristic of expert designers. Topics may include: instructional strategies, use of design software, program design, advanced analysis techniques, motivation design, rapid prototyping, reducing design cycle time, and designing instruction for diverse learner populations.

IDT 775. Designing Online Instruction. 3 Credits.
Lecture, 3 hours. 3 credits. An applied survey of online instruction, including relevant theory and design considerations. Topics include efficacy of online learning, design considerations when using course management systems and similar online learning technologies, research and future directions.

IDT 795. Topics in Instructional Design and Technology. 1-3 Credits.
1-3 credits. Provides opportunities for master’s and doctoral students to explore topics related to instructional design.

IDT 801. Instructional Design and Technology Seminar. 3 Credits.
Lecture 3 hours; 3 credits. Introduces new Ph.D. students to the field of instructional design and technology and provides orientation to doctoral level study. The course includes reading, critiquing and analyzing empirical research, theories, and real-world instructional problems. Potential student research agendas consistent with faculty or programmatic research foci will be explored. Academic and technological expectations will be communicated and practiced.

IDT 810. Trends and Issues in Instructional Design and Technology. 3 Credits.
Lecture, 3 hours. 3 credits. Surveys computing technology with a focus on management in educational contexts. Implementation, integration and resourcing will be covered.

IDT 825. Human Performance Assessment. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: FOUN 722 or equivalent. This course focuses on the theory, design, and evaluation of measurement instruments used to assess individual knowledge, performance, and attitudes. Topics include fundamentals of measurement, reliability, validity, and instrument selection, construction, and use. Students will develop and evaluate instruments for instructional and research purposes.

IDT 830. Principals and Practice of Human Performance Technology. 3 Credits.
Lecture 3 hours. 3 credits. This course explores both the principles and practices of human performance technology, with roughly equal emphasis on both. Students will learn what HPT is, how it's applied in practice, and how and why instructional designers need to know about it. Particular emphasis is given to determining whether or not problems are best amenable to instructional solutions.

IDT 835. Knowledge Management. 3 Credits.
Lecture, 3 hours. 3 credits. This seminar focuses on what knowledge management is and how and why knowledge management is relevant for instructional designers. Emphasis is placed on theoretical approaches to knowledge management, though we will touch upon the design of knowledge management systems.

IDT 837. Consulting Skills for Instructional Designers. 3 Credits.
Lecture, 3 hours. 3 credits. This project-based course is designed to develop and enhance the ability of instructional designers to work as partners and consultants to clients and superiors. The focus is on consulting skills per se, and not any particular content. All students will be required to do an individual consulting project, supervised by the instructor.
IDT 839. Needs Analysis and Assessment. 3 Credits.
Lecture, 3 hours; 3 credits. This project-based class will focus on the process of doing a needs analysis and assessment, from start to finish. Although theoretical considerations regarding needs analyses will be explored, the emphasis is on actually conducting the analysis. Students will work in teams under the supervision of the instructor to conduct a needs analysis for an external client.

IDT 842. Task Analysis Methods. 3 Credits.
Lecture, 3 hours; 3 credits. This project-based course examines several different task analysis methodologies. Major methodologies common in the field will be explored as a class, and students will also be required to familiarize themselves with other methodologies of their choice. Emphasis will be on practical application of the methodologies, especially as regards instructional products or systems.

IDT 846. Foundations of Distance Education. 3 Credits.
Lecture 3 hours; 3 credits. An analysis of the trends, issues, and theories of distance education in education, business, and military applications. Students will examine various distance education systems, policies and lessons from different perspectives.

IDT 848. Instructional Technology Product Evaluation. 3 Credits.
Provides an overview to the science of evaluation, both as a general field and as applied to instruction. Topics will include evaluating the effectiveness of learning technologies; building survey instruments; online and computer-assisted testing; reporting practices; as well as formative, summative program and performance evaluation and assessment. The unique demands of evaluating mediated education and learning environments will be considered. Prerequisites: IDT 749 and IDT 849.

IDT 849. Instructional Systems Design. 3 Credits.
Lecture 3 hours; 3 credits. Students will gain hands-on experience applying a theoretical understanding of instructional design and development to actual projects. Students will learn and use the Instructional Systems Design Process from initial learner profile analysis to design and development through to evaluation. Students will work individually and in teams to gain experience similar to real-world instructional design situations. Students will master the fundamental practices upon which the instructional design process is based.

IDT 851. Computer-Based Multi-Media Design. 3 Credits.
This course covers the theory, design, and evaluation of computer-based multimedia instruction. Students will demonstrate a thorough understanding of instructional theory and design strategies for computer-based drills, tutorials, hypermedia, simulations, games, tools, open-ended learning environments, tests, and web-based instruction. Class projects will center on the design and development of instruction utilizing at least two of these methodologies. Prerequisites: IDT 749 and IDT 849.

IDT 852. Diffusion and Adoption of Instructional Technology Innovations. 3 Credits.
Lecture 3 hours; 3 credits. This course will explore theories, research, and strategies related to the diffusion and adoption of instructional technology innovations in education and training. The course will explore why and how individuals, groups, and organizations adopt or fail to adopt an innovation or change.

IDT 855. Theory and Design of Instructional Simulation. 3 Credits.
Lecture 3 hours; 3 credits. This course focuses on learning theory, design and evaluation of instructional simulations and simulators. Topics include history, instructional design, validation, and integration of instructional simulations.

IDT 856. Instructional Gaming: Theories and Practice. 3 Credits.
Lecture 3 hours; 3 credits. Provides both a conceptual framework and experience in the design and development of instructional games. The course introduces the student to the history, research, theory, and practice of instructional games. Topics include discussions of relevant learning theories associated with instructional gaming, analysis and design of games and current research in instructional gaming.

IDT 860. Cognition and Instructional Design. 3 Credits.
Lecture 3 hours; 3 credits. Students will be introduced to the theoretical frameworks that form the basis of instructional systems theory and design. Focus will be on learning theories, instructional psychology, and instructional system theory. Recent developments in cognition, learning and instruction for educators will also be considered. Topics include perspectives of behaviorism, social-historical constructivism, cognitive science, situated cognition, and cultural influences on cognition.

IDT 861. Applied Instructional Design. 3 Credits.
Problem-based course in which students gain experience applying knowledge from IDT 749/849 to real-world instructional and instructional technology problems. Project work is individual, paired, and in teams. Students demonstrate mastery of the instructional design and development process through production of tools, technologies, media or materials that successfully resolve an instructional problem. Focus is on rapid prototyping model. Prerequisites: IDT 749 and IDT 849.

IDT 863. Instructional Design Theory. 3 Credits.
Lecture 3 hours; 3 credits. Students will investigate traditional and contemporary instructional design theories and models. Behavioral, cognitive, generative, problem-based learning, and constructivist theories as well as cognitive hierarchies will be examined, compared, contrasted and applied to various instructional situations.

IDT 864. Theories and Research. 3 Credits.
Lecture 3 hours, 3 credits. This course is a study of the application of perceptual and learning principles to the design of instructional media for use in educational and training applications. The focus is on the development and application of heuristics from the research literature. We will examine verbal and iconic signs as well as visual imagery, and their role in the instructional and learning processes.

IDT 873. Advanced Instructional Design Techniques. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: IDT 749/849. Exploration and application of techniques, tools and competencies characteristic of expert designers. Topics may include: instructional strategies, use of design software, program design, advanced analysis techniques, motivation design, rapid prototyping, reducing design cycle time, and designing instruction for diverse learner populations.

IDT 875. Designing Online Instruction. 3 Credits.
Lecture, 3 hours. 3 credits. An applied survey of online instruction, including relevant theory and design considerations. Topics include efficacy of online learning, design considerations when using course management systems and similar online learning technologies, research and future directions.

IDT 879. Research Residency in Instructional Design and Technology. 3 Credits.
An introduction to conducting instructional technology research. Students will work in consultation with their advisor to develop a proposal for a study related to instructional technology as part of their research residency that will be submitted for presentation at a nationally refereed conference or to a refereed journal.

IDT 895. Topics in Instructional Design and Technology. 3 Credits.
1-3 credits. Provides opportunities for master’s and doctoral students to explore topics related to instructional design.

IDT 898. Research Residency II. 1-3 Credits.
A mentored research project by the student's advisor. Students work independently with their advisor to complete the research residency project. This course focuses on obtaining appropriate human subjects approval, collecting and analyzing data, and preparing a manuscript suitable for presentation or publication in nationally refereed journal or conference. Course may be repeated as needed, but only 3 hours may be counted toward degree requirements. Prerequisites: IDT 879.