Technology, Art & Design

The Department of Technology, Art & Design offers a variety of programs that span the application of technology, art and design in response to a range of human wants and needs. Courses nurture the development of individual creative expression, critical thinking and problem solving skills. Degree programs foster the development of knowledge and skills to design and develop creative solutions that address operations and future needs in an array of cultural, design, business, technological and industrial settings.

The department offers a nationally accredited* Bachelor of Science program in Engineering Technology, with specializations in Construction Management and Manufacturing Management. Along with the associated Bachelor of Applied Science programs in Applied Engineering and Technology Management, these degree options offer both four-year and transfer students the opportunity to prepare for leadership roles in a wide range of technologically based enterprises including but not limited to the fields of construction, energy, manufacturing and sustainability.

Transfer students have the option to enroll in either the Bachelor of Applied Science program in Applied Engineering or Technology Management. Both degrees are offered as "2 + 2**" programs online or on campus for working professionals who have either an Associate of Science degree, Associate of Applied Science degree, diploma or certificate and wish to complete a Bachelor's degree.

The Bachelor of Science in Design offers students a unique and exciting opportunity to pursue careers that demand excellence in a combination of technical, creative, and artistic capabilities. Students can pursue specializations in Studio Arts, Graphic Design or Exhibit Design. All Design students benefit from a portfolio review process, a graduation requirement that offers them the opportunity to present their professional portfolios to leaders in their industries from across the nation. Students transferring from a Minnesota State Community and/or Technical College with an Associate degree in a related design field may be eligible for articulated transfer into the Design program.

The Department of Technology, Art & Design offers five exhibition spaces that present local, regional, national and international exhibits. The gallery program also maintains permanent collections in ceramics and prints.

*The BS in Engineering Technology is accredited by the Association of Technology, Management, and Applied Engineering (http://atmae.org).

**May vary based on the individual's degree being transferred to the university, and the number of general education (Liberal Education) credits and technical or professional credits.

Programs

- Applied Engineering, B.A.S. *major*
- Applied Management, B.A.S. *major*
- Art: New Studio Practice, B.F.A. (3-D Arts Emphasis) *major*
- Art: New Studio Practice, B.F.A. (Illustration Emphasis) *major*
- Engineering Technology, B.S. *major*
- Project Management, B.S. (Construction and Facility Management Emphasis) *major*
- Project Management, B.S. (Product Development Emphasis) *major*
- Project Management, B.S. (Operations Management Emphasis) *major*
- Technology, Art and Design, B.S. (Interactive Multimedia Design Emphasis) *major*
- Technology, Art and Design, B.S. (Digital Illustration & Animation Emphasis) *major*
- Technology, Art and Design, B.S. (Exhibit & Experience Design Emphasis) *major*
- Technology, Art and Design, B.S. (Creativity & Innovation Emphasis) *major*
- Technology, Art and Design, B.S. (Event Planning & Project Management Emphasis) *major*
- Technology, Art and Design, B.S. (Graphic Design Emphasis) *major*
- Technology, Art and Design, B.S. (Prototype Engineering & Model Making Emphasis) *major*
- Visual Arts Education, B.S. ((Teacher Licensure)) *major*
- Art *minor*
- Design *minor*
- Engineering Technology *minor*
- Event Design *minor*
- Event Planning *minor*
- Interactive Multimedia Design *minor*
- Logistics and Supply Chain Technology *minor*
- Maker Space Technology *minor*
- Project Management *minor*
- Technology, Art & Design *minor*
- 2-D Art & Design Technology *cert*
- 3-D Art & Design Technology *cert*
- Educational Technology *cert*
- Lean Six Sigma *cert*
- Maker Space Technology *cert*
- Making Money As A Maker *cert*
- Technology Manager *cert*

Career Directions

Applications Engineering
Art Director
Artist/Technician
Construction Management
Construction Management Engineer
Engineer
Exhibit Designer
Field Engineer
Graphic Designer
Industrial/Architectural Rendering
Management
Manufacturing Engineering
Model Building
Multimedia Specialist/Designer
Pre-press Production
Print Production
Process Planning
Quality Control Engineering
Research and Development
Safety Engineer
Teaching
Technical Sales
Web Page Development
Also: Graduate Study

Preparation

Recommended High School Courses
Project Lead the Way classes
Drafting
Graphic Arts
Production
Construction
Manufacturing
Electronics
Robotics
Art/Fine Arts
CADD/Computer Programming

Applied Engineering, B.A.S. *major*

Required Credits: 78
Required GPA: 2.25

I TADT COMMON CORE

COMPLETE THE FOLLOWING COURSES:

- TADT 3111 Project Management Methodology (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 4385 Sustainability and Emerging Technologies (3 credits)
- TADT 4873 Emphasis Related Capstone (3 credits)
- TADT 4878 Quality Assurance (3 credits)

II APPLIED ENGINEERING CORE

COMPLETE THE FOLLOWING COURSES:

- TADT 3100 Principles of Professional Development (3 credits)
- TADT 3217 Materials Science and Metallurgy (3 credits)
- TADT 3537 Industrial Design/Innovation (3 credits)
- TADT 3700 Operations Planning and Control (3 credits)
- TADT 3887 Safety and Risk Management (3 credits)
- TADT 4867 Lean Principles and Practices (3 credits)
- TADT 4879 Service Process/Improvement (3 credits)

III TRANSFER TECHNICAL BLOCK

Requires 38 technical credits transferred from an A.S. or A.A.S. degree, or a diploma (e.g., Manufacturing Technology, Automation Technology)

IV REQUIRED TADT ELECTIVES

SELECT 4 CREDITS OF UPPER DIVISION (3000/4000) TADT ELECTIVES WITH ADVISOR APPROVAL.

PROGRAM LEARNING OUTCOMES | APPLIED ENGINEERING, B.A.S.

1. Readiness for Career: Students will apply resource management skills to

address real world problems.

2. Higher Order Thinking: Students will analyze, design, and implement solutions to current industry needs.

3. Communication & Leadership: Students will demonstrate professional communication skills, ethical behavior, and effective team participation.

4. Knowledge, Values, & Abilities: Students will employ value-added skills in real world applications that reflect the needs of industry.

SUGGESTED SEMESTER SCHEDULE APPLIED ENGINEERING, B.A.S.

Freshman

- TADT3100
- TADT3267
- TADT3111
- TADT3700
- Liberal Education Requirements

Sophomore

- TADT3217
- TADT3537
- TADT3887
- TADT4385
- Liberal Education Requirements

Junior

- TADT4867
- TADT4879
- Upper Division TADT Elective with Advisor Approval
- Liberal Education Requirements

Senior

- TADT4873
- TADT4878
- Liberal Education Requirements

Applied Management, B.A.S. *major*

The Applied Management program is designed to prepare individuals to pursue a variety of technology-related management career paths in business or industry. **The program is designed specifically for individuals who possess a two-year technical degree and are interested in advancing their professional career.** The program permits students to apply their 2-year technical degree credits toward a baccalaureate degree. Coupled with a two-year technical/applied degree providing a focused foundation, students complete junior and senior-level courses covering a broad range of technology and applied management concepts and applications. This breadth provides maximum flexibility for graduates to pursue diverse employment opportunities. Completion of the degree is available through a web-based distance delivery format. Students should work closely with an advisor to obtain program and course selection information.

Required Credits: 60
Required GPA: 2.25

TRANSFER DEGREE CREDITS

A minimum of 30 credits must be transferred from an AS degree, AAS degree, diploma or certificate. Additional transfer credits will be accepted as general elective credits and will count toward the 120 credit requirement for a bachelor's degree.

I REQUIRED FOUNDATION CORE

COMPLETE THE FOLLOWING COURSES:

- ACCT 1100 Financial Literacy (3 credits)
- ECON 2000 Principles of Microeconomics (3 credits)
- ECON 2100 Principles of Macroeconomics (3 credits)
- MATH 1100 Mathematical Reasoning (3 credits)
- TADT 2100 Impact Of Technology, Art & Design (2 credits)
- TADT 2211 Introduction to Cost Management (3 credits)

II REQUIRED MAJOR CORE

COMPLETE THE FOLLOWING COURSES:

- TADT 3100 Principles of Professional Development (3 credits)
- TADT 3111 Project Management Methodology (3 credits)
- TADT 3112 Leadership in a Team Environment (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 3700 Operations Planning and Control (3 credits)
- TADT 4385 Sustainability and Emerging Technologies (3 credits)
- TADT 4873 Emphasis Related Capstone (3 credits)
- TADT 4875 Facilities Management (3 credits)
- TADT 4878 Quality Assurance (3 credits)
- TADT 4880 Total Quality Management (3 credits)

III ADVISOR APPROVED CAREER RELATED ELECTIVE COURSES

SELECT 13 CAREER RELATED OR LIBERAL EDUCATION/MNTC CREDITS WITH ASSISTANCE FROM A FACULTY ADVISOR TO COMPLETE GRADUATION REQUIREMENTS. (10 OF THESE MAY NEED TO BE UPPER DIVISION CREDITS)

PROGRAM LEARNING OUTCOMES | APPLIED MANAGEMENT, B.A.S.

1. Readiness for Career: Students will apply resource management skills to address real world problems.

2. Higher Order Thinking: Students will analyze, design, and implement solutions to current industry needs.

3. Communication & Leadership: Students will demonstrate professional communication skills, ethical behavior, and effective team participation.

4. Knowledge, Values, & Abilities: Students will employ value-added skills in real world applications that reflect the needs of industry.

SUGGESTED SEMESTER SCHEDULE FOR: APPLIED MANAGEMENT, B.A.S.

Semester 1 Fall

- ACCT1100
- MATH1100
- TADT2100
- TADT2211

Semester 2 Spring

- ECON2000
- ECON2100
- TADT3112
- Advisor Approved Career Related Elective Courses (6 credits)

Semester 3 Summer

- TADT3700
- TADT4385
- TADT4880

Semester 4 Fall

- TADT3100
- TADT3111
- TADT3267
- Advisor Approved Career Related Elective Courses (6 credits)

Semester 5 Spring

- TADT4873
- TADT4875
- TADT4878
- Advisor Approved Career Related Elective Courses (5 credits)

Art: New Studio Practice, B.F.A. *major* 3-D Arts Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

Culmination Core

Complete the following courses:

- TADD 3899 Junior Culmination: Internship Planning (2 credits)
- TADD 4899 Senior Culmination: Career Planning (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Art & Design Core

Complete the following courses:

- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 2100 History, Philosophy, and Application of Color (3 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)

3D Core

Complete the following courses:

- TADD 3200 Introduction to Model Making (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)

TAD Lab Core

Complete 6 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD 3679 TAD LAB: CNC Metals (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

3D ARTS EMPHASIS

3D Arts Core

Complete the following courses:

- ARTH 2551 Art History Survey I (4 credits)
- ARTH 2552 Art History Survey II (4 credits)
- TADD 3400 Sculpture: Experimental (2 credits)
- TADD 3410 Sculpture: Traditional (2 credits)
- TADD 3448 Tech Toolbox II: Fusion 360 (2 credits)
- TADD 3480 Ceramics: Hand & Wheel (4 credits)
- TADD 3700 Materials, Lighting, and Structures (2 credits)
- TADD 4430 Sculpture: CNC (2 credits)
- TADD 4870 Advanced 3D Arts (2 credits)
- TADD 4897 Senior Exhibition (0 credit)

Art: New Studio Practice, B.F.A. *major* Illustration Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)

- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

Culmination Core

Complete the following courses:

- TADD 3899 Junior Culmination: Internship Planning (2 credits)
- TADD 4899 Senior Culmination: Career Planning (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Art & Design Core

Complete the following courses:

- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 2100 History, Philosophy, and Application of Color (3 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)

2D Core

Complete the following courses:

- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)
- TADD 3020 Typography: Hand Lettering (2 credits)

TAD Lab Core

Complete 2 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD 3679 TAD LAB: CNC Metals (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

ILLUSTRATION EMPHASIS

Illustration Core

Complete the following courses:

- ARTH 2551 Art History Survey I (4 credits)
- ARTH 2552 Art History Survey II (4 credits)
- TADD 3100 Digital Illustration: Vector Art (2 credits)
- TADD 3140 Figure Illustration (2 credits)
- TADD 3160 Spatial Illustration (2 credits)
- TADD 3180 Digital Painting: Raster Art (2 credits)
- TADD 3340 Branding & Identity Design (2 credits)
- TADD 3460 Printmaking: Traditional (2 credits)
- TADD 3470 Printmaking: Experimental (2 credits)
- TADD 4120 Illustrative Storytelling (2 credits)
- TADD 4190 Animated Illustration (2 credits)
- TADD 4880 Advanced Illustration (2 credits)
- TADD 4897 Senior Exhibition (0 credit)

Engineering Technology, B.S. *major*

Required Credits: 79
Required GPA: 2.25

I TADT COMMON CORE

Complete the following courses:

- TADT 1111 Introduction to Project Management (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 4385 Sustainability and Emerging Technologies (3 credits)
- TADT 4873 Emphasis Related Capstone (3 credits)
- TADT 4878 Quality Assurance (3 credits)

Complete the following course for 1 credit:

- TADT 3970 Internship (1-3 credits)

Complete the following course for 2 credits:

- TADT 4970 Internship (1-12 credits)

II ENGINEERING TECHNOLOGY CORE COURSES

Complete the following courses:

- MATH 1470 Precalculus (5 credits)
- PHYS 1101 General Physics I (4 credits)
- PHYS 1102 General Physics II (4 credits)
- TADT 1210 Introduction to Manufacturing Processes I (3 credits)
- TADT 1220 Introduction to Manufacturing Processes II (3 credits)
- TADT 1460 2D Graphics And Laser Etching (3 credits)
- TADT 1464 Engineering Technology Project I (3 credits)
- TADT 2100 Impact Of Technology, Art & Design (2 credits)
- TADT 2217 Strength of Materials (3 credits)
- TADT 2461 Parametric 3D Modeling (3 credits)
- TADT 2465 Engineering Technology Project II (3 credits)
- TADT 2877 Engineering Problem Solving (3 credits)
- TADT 3217 Materials Science and Metallurgy (3 credits)
- TADT 3277 Programmable Logic Controllers (3 credits)
- TADT 3462 Computer Controlled Machining (3 credits)
- TADT 3537 Industrial Design/Innovation (3 credits)
- TADT 4778 Advanced Topics in Technology (3 credits)

III REQUIRED FOUNDATION COURSES

Select 7 credits from the following or any 3000/4000 level TADD course:

- TADT 3250 Print Reading and Project Documentation (3 credits)
- TADT 4589 Advanced Prototype Project (3 credits)
- TADT 4880 Total Quality Management (3 credits)

Program Learning Outcomes | Engineering Technology, B.S.

1. Readiness for Career: Students will apply resource management skills to address real world problems.

2. Higher Order Thinking: Students will analyze, design, and implement solutions to current industry needs.

3. Communication & Leadership: Students will demonstrate professional communication skills, ethical behavior, and effective team participation.

4. Knowledge, Values, & Abilities: Students will employ value-added skills in real world applications that reflect the needs of industry.

Project Management, B.S. *major*
Construction and Facility Management Emphasis

The Project Management degree prepares graduates for planning and managing resources under the constraints of scope, cost and time to successfully achieve a specific, unique objective. This program addresses the tools, skills and knowledge necessary to initiate, plan, implement and evaluate projects to deliver solutions. Program disciplines include: safety and risk management, leadership, quality assurance, technical sales, training, sustainability, engineering economics and cost analysis. Project Management majors have the option to select from three distinct technology related emphases: Construction and Facility Management, product Development or Operations Management. Technical credits may be transferred in with the help of an advisor.

Required Credits: 72
Required GPA: 2.25

I TADT COMMON CORE

COMPLETE THE FOLLOWING COURSES:

- TADT 1111 Introduction to Project Management (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 4385 Sustainability and Emerging Technologies (3 credits)
- TADT 4873 Emphasis Related Capstone (3 credits)
- TADT 4878 Quality Assurance (3 credits)

COMPLETE THE FOLLOWING COURSE FOR 1 CREDIT:

- TADT 3970 Internship (1-3 credits)

COMPLETE THE FOLLOWING COURSE FOR 2 CREDITS:

- TADT 4970 Internship (1-12 credits)

II PROJECT MANAGEMENT CORE COURSES

COMPLETE THE FOLLOWING COURSES:

- BUAD 2220 Legal Environment (3 credits)
- TADT 1109 Computer Applications for Project Managers (3 credits)
- TADT 1460 2D Graphics And Laser Etching (3 credits)
- TADT 2211 Introduction to Cost Management (3 credits)
- TADT 2877 Engineering Problem Solving (3 credits)
- TADT 3112 Leadership in a Team Environment (3 credits)
- TADT 3885 Technical Sales, Service and Training (3 credits)
- TADT 4875 Facilities Management (3 credits)
- TADT 4893 Applied Project Management (3 credits)

CONSTRUCTION AND FACILITY MANAGEMENT EMPHASIS

COMPLETE THE FOLLOWING COURSES:

- BUAD 3677 Real Estate (3 credits)
- TADT 1210 Introduction to Manufacturing Processes I (3 credits)
- TADT 1220 Introduction to Manufacturing Processes II (3 credits)
- TADT 2250 Built Environment (3 credits)
- TADT 2252 Construction Materials and Methods (3 credits)
- TADT 3250 Print Reading and Project Documentation (3 credits)
- TADT 3260 Project Bidding and Estimating (3 credits)
- TADT 3887 Safety and Risk Management (3 credits)
- TADT 4259 Construction Management (3 credits)

Program Learning Outcomes | Project Management, B.S.

1. Readiness for Career: Students will apply resource management skills to address real world problems.

2. Higher Order Thinking: Students will analyze, design, and implement solutions to current industry needs.

3. Communication & Leadership: Students will demonstrate professional communication skills, ethical behavior, and effective team participation.

4. Knowledge, Values, & Abilities: Students will employ value-added skills in real world applications that reflect the needs of industry.

Project Management, B.S. *major*
Product Development Emphasis

The Project Management degree prepares graduates for planning and managing resources under the constraints of scope, cost and time to successfully achieve a specific, unique objective. This program addresses the tools, skills and knowledge necessary to initiate, plan, implement and evaluate projects to deliver solutions. Program disciplines include: safety and risk management, leadership, quality assurance, technical sales, training, sustainability, engineering economics and cost analysis. Project Management majors have the option to select from three distinct technology related emphases: Construction and Facility Management, product Development or Operations Management. Technical credits may be transferred in with the help of an advisor.

Required Credits: 72
Required GPA: 2.25

I TADT COMMON CORE

COMPLETE THE FOLLOWING COURSES:

- TADT 1111 Introduction to Project Management (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 4385 Sustainability and Emerging Technologies (3 credits)
- TADT 4873 Emphasis Related Capstone (3 credits)
- TADT 4878 Quality Assurance (3 credits)

COMPLETE THE FOLLOWING COURSE FOR 1 CREDIT:

- TADT 3970 Internship (1-3 credits)

COMPLETE THE FOLLOWING COURSE FOR 2 CREDITS:

- TADT 4970 Internship (1-12 credits)

II PROJECT MANAGEMENT CORE COURSES

COMPLETE THE FOLLOWING COURSES:

- BUAD 2220 Legal Environment (3 credits)
- TADT 1109 Computer Applications for Project Managers (3 credits)
- TADT 1460 2D Graphics And Laser Etching (3 credits)
- TADT 2211 Introduction to Cost Management (3 credits)
- TADT 2877 Engineering Problem Solving (3 credits)
- TADT 3112 Leadership in a Team Environment (3 credits)
- TADT 3885 Technical Sales, Service and Training (3 credits)
- TADT 4875 Facilities Management (3 credits)
- TADT 4893 Applied Project Management (3 credits)

PRODUCT DEVELOPMENT EMPHASIS

COMPLETE THE FOLLOWING COURSES:

- TADT 1210 Introduction to Manufacturing Processes I (3 credits)
- TADT 1220 Introduction to Manufacturing Processes II (3 credits)
- TADT 1450 Introduction to Product Development (3 credits)
- TADT 2450 Product Finishing & Aesthetics (3 credits)
- TADT 2461 Parametric 3D Modeling (3 credits)
- TADT 3462 Computer Controlled Machining (3 credits)
- TADT 3470 Concept to Prototype Model (3 credits)
- TADT 3537 Industrial Design/Innovation (3 credits)
- TADT 4589 Advanced Prototype Project (3 credits)

Program Learning Outcomes | Project Management, B.S.

1. Readiness for Career: Students will apply resource management skills to address real world problems.

2. Higher Order Thinking: Students will analyze, design, and implement solutions to current industry needs.

3. Communication & Leadership: Students will demonstrate professional communication skills, ethical behavior, and effective team participation.

4. Knowledge, Values, & Abilities: Students will employ value-added skills in real world applications that reflect the needs of industry.

SUGGESTED SEMESTER SCHEDULE PROJECT MANAGEMENT, B.S. PRODUCT DEVELOPMENT EMPHASIS

Freshman

- TADT1109
- TADT1111
- TADT1210
- TADT1220
- TADT1450
- TADT1460
- TADT2211
- Liberal Education Requirements

Sophomore

- BUAD2220
- TADT2450
- TADT2461
- TADT2877
- TADT3462
- Liberal Education Requirements

Sophomore - Summer

- TADT3970
  Internship for 1 Credit

Junior

- TADT3112
- TADT3267
- TADT3470
- TADT3537
- TADT3885
- Elective
- Liberal Education Requirements

Junior - Summer

- TADT4970
  Internship for 2 Credits

Senior

- TADT4385
- TADT4589
- TADT4873
- TADT4875
- TADT4878
- TADT4893
- Elective
- Liberal Education Requirements

Project Management, B.S. *major*
Operations Management Emphasis

The Project Management degree prepares graduates for planning and managing resources under the constraints of scope, cost and time to successfully achieve a specific, unique objective. This program addresses the tools, skills and knowledge necessary to initiate, plan, implement and evaluate projects to deliver solutions. Program disciplines include: safety and risk management, leadership, quality assurance, technical sales, training, sustainability, engineering economics and cost analysis. Project Management majors have the option to select from three distinct technology related emphases: Construction and Facility Management, product Development or Operations Management. Technical credits may be transferred in with the help of an advisor.

Required Credits: 72
Required GPA: 2.25

I TADT COMMON CORE

COMPLETE THE FOLLOWING COURSES:

- TADT 1111 Introduction to Project Management (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 4385 Sustainability and Emerging Technologies (3 credits)
- TADT 4873 Emphasis Related Capstone (3 credits)
- TADT 4878 Quality Assurance (3 credits)

COMPLETE THE FOLLOWING COURSE FOR 1 CREDIT:

- TADT 3970 Internship (1-3 credits)

COMPLETE THE FOLLOWING COURSE FOR 2 CREDITS:

- TADT 4970 Internship (1-12 credits)

II PROJECT MANAGEMENT CORE COURSES

COMPLETE THE FOLLOWING COURSES:

- BUAD 2220 Legal Environment (3 credits)
- TADT 1109 Computer Applications for Project Managers (3 credits)
- TADT 1460 2D Graphics And Laser Etching (3 credits)
- TADT 2211 Introduction to Cost Management (3 credits)
- TADT 2877 Engineering Problem Solving (3 credits)
- TADT 3112 Leadership in a Team Environment (3 credits)
- TADT 3885 Technical Sales, Service and Training (3 credits)
- TADT 4875 Facilities Management (3 credits)
- TADT 4893 Applied Project Management (3 credits)

OPERATIONS MANAGEMENT EMPHASIS

COMPLETE THE FOLLOWING COURSES:

- TADT 1210 Introduction to Manufacturing Processes I (3 credits)
- TADT 1220 Introduction to Manufacturing Processes II (3 credits)
- TADT 2461 Parametric 3D Modeling (3 credits)
- TADT 3100 Principles of Professional Development (3 credits)
- TADT 3700 Operations Planning and Control (3 credits)
- TADT 3887 Safety and Risk Management (3 credits)
- TADT 4867 Lean Principles and Practices (3 credits)
- TADT 4879 Service Process/Improvement (3 credits)
- TADT 4880 Total Quality Management (3 credits)

Program Learning Outcomes | Project Management, B.S.

1. Readiness for Career: Students will apply resource management skills to address real world problems.

2. Higher Order Thinking: Students will analyze, design, and implement solutions to current industry needs.

3. Communication & Leadership: Students will demonstrate professional communication skills, ethical behavior, and effective team participation.

4. Knowledge, Values, & Abilities: Students will employ value-added skills in real world applications that reflect the needs of industry.

SUGGESTED SEMESTER SCHEDULE PROJECT MANAGEMENT, B.S. OPERATIONS MANAGEMENT EMPHASIS

Freshman

- TADT1109
- TADT1111
- TADT1460
- TADT1210
- TADT1220
- TADT2211
- Liberal Education Requirements

Sophomore

- BUAD2220
- TADT2461
- TADT2877
- Liberal Education Requirements

Junior

- TADT3100
- TADT3112
- TADT3267
- TADT3700
- TADT3885
- TADT3887
- Elective 01
- Elective 02
- Liberal Education Requirements

Senior

- TADT4385
- TADT4867
- TADT4873
- TADT4875
- TADT4878
- TADT4879
- TADT4880
- TADT4893

Technology, Art and Design, B.S. *major*
Interactive Multimedia Design Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

Culmination Core

Complete the following courses:

- TADD 3899 Junior Culmination: Internship Planning (2 credits)
- TADD 4899 Senior Culmination: Career Planning (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Art & Design Core

Complete the following courses:

- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 2100 History, Philosophy, and Application of Color (3 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)

2D Core

Complete the following courses:

- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)
- TADD 3020 Typography: Hand Lettering (2 credits)

3D Core

Complete the following courses:

- TADD 3200 Introduction to Model Making (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)

Creative Core

Complete the following courses:

- TADD 3040 Typography: Digital Typefaces (2 credits)
- TADD 3300 Wayfinding & Signage Design (2 credits)
- TADD 3340 Branding & Identity Design (2 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)

TAD Lab Core

Complete 2 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD 3679 TAD LAB: CNC Metals (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

Interactive Multimedia Design Emphasis

Complete the following courses:

- TADD 3800 Tech Toolbox III: After Effects (2 credits)
- TADD 3850 Digital Signage (2 credits)
- TADD 4020 Web & Social Media Design (2 credits)
- TADD 4040 UX Design (2 credits)
- TADD 4810 Advanced Extended Reality (2 credits)
- TADD 4840 Advanced Interactive Multimedia Design (2 credits)

Program Learning Outcomes | Technology, Art & Design, B.S.

1. Students will communicate effectively in oral, written and visual forms.

2. Demonstrate knowledge in diverse cultural and historical perspectives and apply them to their art and design practice.

3. Students will develop and demonstrate competence in implementing art and/or design principles.

4. Students will demonstrate the ability to implement the creative process independently and/or interdependently.

5. Students will exhibit the ability to seek, give and accept constructive criticism.

Technology, Art and Design, B.S. *major*
Digital Illustration & Animation Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

Culmination Core

Complete the following courses:

- TADD 3899 Junior Culmination: Internship Planning (2 credits)
- TADD 4899 Senior Culmination: Career Planning (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Art & Design Core

Complete the following courses:

- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 2100 History, Philosophy, and Application of Color (3 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)

TAD Lab Core

Complete 2 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)

- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD 3679 TAD LAB: CNC Metals (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

Digital Illustration Core

Complete the following courses:

- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)
- TADD 3020 Typography: Hand Lettering (2 credits)
- TADD 3100 Digital Illustration: Vector Art (2 credits)
- TADD 3140 Figure Illustration (2 credits)
- TADD 3160 Spatial Illustration (2 credits)
- TADD 3180 Digital Painting: Raster Art (2 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
- TADD 3800 Tech Toolbox III: After Effects (2 credits)
- TADD 3850 Digital Signage (2 credits)
- TADD 4020 Web & Social Media Design (2 credits)
- TADD 4040 UX Design (2 credits)
- TADD 4120 Illustrative Storytelling (2 credits)
- TADD 4190 Animated Illustration (2 credits)
- TADD 4880 Advanced Illustration (2 credits)

Program Learning Outcomes | Technology, Art & Design, B.S.

1. Students will communicate effectively in oral, written and visual forms.

2. Demonstrate knowledge in diverse cultural and historical perspectives and apply them to their art and design practice.

3. Students will develop and demonstrate competence in implementing art and/or design principles.

4. Students will demonstrate the ability to implement the creative process independently and/or interdependently.

5. Students will exhibit the ability to seek, give and accept constructive criticism.

Technology, Art and Design, B.S. *major* Exhibit & Experience Design Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

Culmination Core

Complete the following courses:

- TADD 3899 Junior Culmination: Internship Planning (2 credits)
- TADD 4899 Senior Culmination: Career Planning (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Art & Design Core

Complete the following courses:

- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 2100 History, Philosophy, and Application of Color (3 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)

2D Core

Complete the following courses:

- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)
- TADD 3020 Typography: Hand Lettering (2 credits)

3D Core

Complete the following courses:

- TADD 3200 Introduction to Model Making (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)

Creative Core

Complete the following courses:

- TADD 3040 Typography: Digital Typefaces (2 credits)
- TADD 3300 Wayfinding & Signage Design (2 credits)
- TADD 3340 Branding & Identity Design (2 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)

TAD Lab Core

Complete 2 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)

- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD 3679 TAD LAB: CNC Metals (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

Exhibit & Experience Design Emphasis

Complete the following courses:

- TADD 3700 Materials, Lighting, and Structures (2 credits)
- TADD 3750 Tradeshow Exhibit Design (2 credits)
- TADD 3780 Museum Experience Design (2 credits)
- TADD 4700 Pop-up Shop & Visual Merchandising Design (2 credits)
- TADD 4750 Event Design (2 credits)
- TADD 4820 Advanced Experience Design (2 credits)

Program Learning Outcomes | Technology, Art & Design, B.S.

1. Students will communicate effectively in oral, written and visual forms.

2. Demonstrate knowledge in diverse cultural and historical perspectives and apply them to their art and design practice.

3. Students will develop and demonstrate competence in implementing art and/or design principles.

4. Students will demonstrate the ability to implement the creative process independently and/or interdependently.

5. Students will exhibit the ability to seek, give and accept constructive criticism.

Technology, Art and Design, B.S. *major*
Creativity & Innovation Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

Creativity & Innovation

Once students successfully complete the TAD Common Core (26 credits), they must work with their academic advisor to build their educational plan. To earn the Creativity and Innovation emphasis, this educational plan must consist of an additional 52 credits mutually agreed upon from the School of Technology, Art & Design.

In other words, these remaining 52 credits can be any TADD or TADT courses offered by the School of Technology, Art & Design.

Program Learning Outcomes | Technology, Art & Design, B.S.

1. Students will communicate effectively in oral, written and visual forms.

2. Demonstrate knowledge in diverse cultural and historical perspectives and apply them to their art and design practice.

3. Students will develop and demonstrate competence in implementing art and/or design principles.

4. Students will demonstrate the ability to implement the creative process independently and/or interdependently.

5. Students will exhibit the ability to seek, give and accept constructive criticism.

Technology, Art and Design, B.S. *major*
Event Planning & Project Management Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

TAD Lab Core

Complete 2 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD 3679 TAD LAB: CNC Metals (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

EVENT PLANNING & PROJECT MANAGEMENT EMPHASIS

Project Management Core

Complete the following courses:

- TADT 1109 Computer Applications for Project Managers (3 credits)
- TADT 1111 Introduction to Project Management (3 credits)
- TADT 1220 Introduction to Manufacturing Processes II (3 credits)
- TADT 2211 Introduction to Cost Management (3 credits)
- TADT 2250 Built Environment (3 credits)
- TADT 2252 Construction Materials and Methods (3 credits)
- TADT 3112 Leadership in a Team Environment (3 credits)
- TADT 3250 Print Reading and Project Documentation (3 credits)
- TADT 3260 Project Bidding and Estimating (3 credits)
- TADT 3885 Technical Sales, Service and Training (3 credits)

Event Planning Core

Complete the following courses:

- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 3240 Prototype Engineering & Detailing (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
- TADD 3700 Materials, Lighting, and Structures (2 credits)
- TADD 3750 Tradeshow Exhibit Design (2 credits)
- TADD 4700 Pop-up Shop & Visual Merchandising Design (2 credits)
- TADD 4750 Event Design (2 credits)
- TADD 4830 Advanced Event Planning & Project Management (2 credits)

Program Learning Outcomes | Technology, Art & Design, B.S.

1. Students will communicate effectively in oral, written and visual forms.

2. Demonstrate knowledge in diverse cultural and historical perspectives and apply them to their art and design practice.

3. Students will develop and demonstrate competence in implementing art and/or design principles.

4. Students will demonstrate the ability to implement the creative process independently and/or interdependently.

5. Students will exhibit the ability to seek, give and accept constructive criticism.

Technology, Art and Design, B.S. *major*
Graphic Design Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

Culmination Core

Complete the following courses:

- TADD 3899 Junior Culmination: Internship Planning (2 credits)
- TADD 4899 Senior Culmination: Career Planning (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Art & Design Core

Complete the following courses:

- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 2100 History, Philosophy, and Application of Color (3 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)

2D Core

Complete the following courses:

- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)
- TADD 3020 Typography: Hand Lettering (2 credits)

3D Core

Complete the following courses:

- TADD 3200 Introduction to Model Making (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)

Creative Core

Complete the following courses:

- TADD 3040 Typography: Digital Typefaces (2 credits)
- TADD 3300 Wayfinding & Signage Design (2 credits)
- TADD 3340 Branding & Identity Design (2 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)

TAD Lab Core

Complete 2 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD 3679 TAD LAB: CNC Metals (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

Graphic Design Emphasis

Complete the following courses:

- TADD 3320 Package Design (2 credits)
- TADD 3460 Printmaking: Traditional (2 credits)
- TADD 3470 Printmaking: Experimental (2 credits)
- TADD 4800 Advanced Typography (2 credits)
- TADD 4850 Advanced Branding & Identity Design (2 credits)
- TADD 4898 Advanced Graphic Design (2 credits)

Program Learning Outcomes | Technology, Art & Design, B.S.

1. Students will communicate effectively in oral, written and visual forms.

2. Demonstrate knowledge in diverse cultural and historical perspectives and apply them to their art and design practice.

3. Students will develop and demonstrate competence in implementing art and/or design principles.

4. Students will demonstrate the ability to implement the creative process independently and/or interdependently.

5. Students will exhibit the ability to seek, give and accept constructive criticism.

Technology, Art and Design, B.S. *major*
Prototype Engineering & Model Making Emphasis

Required Credits: 78
Required GPA: 2.00

Required TAD Core Courses

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)

Culmination Core

Complete the following courses:

- TADD 3899 Junior Culmination: Internship Planning (2 credits)
- TADD 4899 Senior Culmination: Career Planning (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

3D Core

Complete the following courses:

- TADD 3200 Introduction to Model Making (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)

TAD Lab Core

Complete 14 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD 3679 TAD LAB: CNC Metals (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

PROTOTYPE ENGINEERING & MODEL MAKING EMPHASIS

Complete the following courses:

- TADD 3220 Conceptual Prototype Engineering (2 credits)
- TADD 3240 Prototype Engineering & Detailing (2 credits)
- TADD 3250 Product Model Making (2 credits)
- TADD 3260 Architectural Model Making (2 credits)
- TADD 3280 Furniture Design & Model Making (2 credits)
- TADD 3320 Package Design (2 credits)
- TADD 3400 Sculpture: Experimental (2 credits)
- TADD 3410 Sculpture: Traditional (2 credits)
- TADD 3448 Tech Toolbox II: Fusion 360 (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
- TADD 3700 Materials, Lighting, and Structures (2 credits)
- TADD 4430 Sculpture: CNC (2 credits)
- TADD 4860 Advanced Prototype Engineering & Model Making (2 credits)

Program Learning Outcomes | Technology, Art & Design, B.S.

1. Students will communicate effectively in oral, written and visual forms.

2. Demonstrate knowledge in diverse cultural and historical perspectives and apply them to their art and design practice.

3. Students will develop and demonstrate competence in implementing art and/or design principles.

4. Students will demonstrate the ability to implement the creative process independently and/or interdependently.

5. Students will exhibit the ability to seek, give and accept constructive criticism.

Visual Arts Education, B.S. *major*
(Teacher Licensure)

Required Credits: 87
Required GPA: 2.50

I REQUIRED COURSES

Complete the following courses:

- ARTH 2551 Art History Survey I (4 credits)
- ARTH 2552 Art History Survey II (4 credits)
- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 2100 History, Philosophy, and Application of Color (3 credits)
- TADD 2670 Painting (4 credits)
- TADD 2925 People of the Environment: Technology, Art, and Design Perspective (3 credits)
- TADD3000
- TADD 3330 K-12 Art Methods (4 credits)
- TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
- TADD 3410 Sculpture: Traditional (2 credits)
- TADD 3470 Printmaking: Experimental (2 credits)
- TADD 3480 Ceramics: Hand & Wheel (4 credits)

II CAREER AND TECHNICAL EDUCATION COURSES

Complete the following courses:

- TADT 4830 Foundations in Career and Technical Education (2 credits)
- TADT 4849 Classroom Management in Career and Technical Education (2 credits)
- TADT 4858 Curriculum Development in Career and Technical Education (2 credits)

REQUIRED PROFESSIONAL EDUCATION COURSES

Complete the following courses with a minimum 2.50 GPA:

- ED 3100 Introduction to the Foundations of Public School Education (3 credits)
- ED 3110 Educational Psychology (3 credits)
- ED 3140 Human Relations In Education (3 credits)
- ED 3350 Pedagogy: Planning for Instruction (3 credits)
- ED 3780 Adaptation and Management: Designing the Learning Environment (3 credits)
- ED 4737 Content Area Reading (3 credits)
- ED 4799 The Professional Teacher (1 credit)

Complete the following course:

- HLTH 3400 Health and Drugs in Society (2 credits)

Complete 12 credits of student teaching:

- ED 4840 Student Teaching - Special Fields (1-12 credits)

Art *minor*

Required Credits: 30
Required GPA: 2.00

I REQUIRED COURSES

Note: The Art minor is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 2670 Painting (4 credits)
- TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)

II ELECTIVE BLOCK

Complete 11 credits from the following:

- ARTH 2551 Art History Survey I (4 credits)
- ARTH 2552 Art History Survey II (4 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 2100 History, Philosophy, and Application of Color (3 credits)
- TADD 3100 Digital Illustration: Vector Art (2 credits)
- TADD 3140 Figure Illustration (2 credits)
- TADD 3160 Spatial Illustration (2 credits)
- TADD 3180 Digital Painting: Raster Art (2 credits)
- TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)
- TADD 3400 Sculpture: Experimental (2 credits)
- TADD 3410 Sculpture: Traditional (2 credits)
- TADD 3480 Ceramics: Hand & Wheel (4 credits)
- TADD 4120 Illustrative Storytelling (2 credits)
- TADD 4190 Animated Illustration (2 credits)

Design *minor*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 30
Required GPA: 2.00

I REQUIRED COURSES

Note: The Design minor is not available to not available to students pursuing the Technology major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)

- TADD 3020 Typography: Hand Lettering (2 credits)
- TADD 3040 Typography: Digital Typefaces (2 credits)
- TADD 3320 Package Design (2 credits)
- TADD 3340 Branding & Identity Design (2 credits)
- TADD 4800 Advanced Typography (2 credits)
- TADD 4850 Advanced Branding & Identity Design (2 credits)
- TADD 4898 Advanced Graphic Design (2 credits)

Engineering Technology *minor*

Required Credits: 18
Required GPA: 2.00

COMPLETE THE FOLLOWING COURSES 15 credits must be unique from major:

- TADT 1210 Introduction to Manufacturing Processes I (3 credits)
- TADT 1220 Introduction to Manufacturing Processes II (3 credits)
- TADT 1450 Introduction to Product Development (3 credits)
- TADT 1460 2D Graphics And Laser Etching (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 3537 Industrial Design/Innovation (3 credits)

Event Design *minor*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 30
Required GPA: 2.00

I REQUIRED COURSES

Note: The Event Design minor is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 3300 Wayfinding & Signage Design (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
- TADD 3700 Materials, Lighting, and Structures (2 credits)
- TADD 3750 Tradeshow Exhibit Design (2 credits)
- TADD 3780 Museum Experience Design (2 credits)
- TADD 4700 Pop-up Shop & Visual Merchandising Design (2 credits)
- TADD 4750 Event Design (2 credits)
- TADD 4820 Advanced Experience Design (2 credits)

Event Planning *minor*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 30
Required GPA: 2.00

I REQUIRED COURSES

Note: The Event Planning minor is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)
- TADD 3750 Tradeshow Exhibit Design (2 credits)
- TADD 4750 Event Design (2 credits)
- TADT 1109 Computer Applications for Project Managers (3 credits)
- TADT 1111 Introduction to Project Management (3 credits)
- TADT 2252 Construction Materials and Methods (3 credits)
- TADT 3260 Project Bidding and Estimating (3 credits)

Interactive Multimedia Design *minor*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 30
Required GPA: 2.00

I REQUIRED COURSES

Note: The Interactive Multimedia Design minor is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
- TADD 3800 Tech Toolbox III: After Effects (2 credits)
- TADD 3850 Digital Signage (2 credits)
- TADD 4020 Web & Social Media Design (2 credits)
- TADD 4040 UX Design (2 credits)
- TADD 4840 Advanced Interactive Multimedia Design (2 credits)

Logistics and Supply Chain Technology *minor*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 18
Required GPA: 2.25

I REQUIRED COURSES

Complete the following courses:

- TADT 2211 Introduction to Cost Management (3 credits)
- TADT 3700 Operations Planning and Control (3 credits)
- TADT 3860 Logistics in Supply Chain (3 credits)
- TADT 4727 Procurement and Inventory Control (3 credits)
- TADT 4827 Information Technology in Supply Chain (3 credits)
- TADT 4867 Lean Principles and Practices (3 credits)

Maker Space Technology *minor*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 30
Required GPA: 2.00

I REQUIRED COURSES

Note: The Maker Space Technology minor is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis. This minor is not available to students pursuing pursuing the Maker Space Technology certificate.

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 3448 Tech Toolbox II: Fusion 360 (2 credits)
- TADD 3480 Ceramics: Hand & Wheel (4 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

II ELECTIVE BLOCK

Complete 14 credits from the following:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD3689
- TADD 4867 Advanced Studio Practice (2 credits)

Project Management *minor*

Required Credits: 18
Required GPA: 2.00

SELECT 1 OF THE FOLLOWING:

- TADT 1111 Introduction to Project Management (3 credits)
- TADT 3111 Project Management Methodology (3 credits)

COMPLETE THE FOLLOWING COURSES:

- TADT 3112 Leadership in a Team Environment (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 3885 Technical Sales, Service and Training (3 credits)
- TADT 4878 Quality Assurance (3 credits)
- TADT 4893 Applied Project Management (3 credits)
  (Note: TADT 4893 only offered on-campus)

Technology, Art & Design *minor*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 30
Required GPA: 2.00

I REQUIRED COURSES

Note: The Technology, Art and Design minor is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1800 Creativity in Action (2 credits)

II REQUIRED ELECTIVES

Complete 16 credits from the following:

- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 2300 Introduction to Typography (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)
- TADD 3020 Typography: Hand Lettering (2 credits)
- TADD 3040 Typography: Digital Typefaces (2 credits)
- TADD 3300 Wayfinding & Signage Design (2 credits)
- TADD 3320 Package Design (2 credits)
- TADD 3340 Branding & Identity Design (2 credits)
- TADD 3380 Designing for Experiences (2 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)

- TADD 3460 Printmaking: Traditional (2 credits)
- TADD 3470 Printmaking: Experimental (2 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
- TADD 3700 Materials, Lighting, and Structures (2 credits)
- TADD 3750 Tradeshow Exhibit Design (2 credits)
- TADD 3780 Museum Experience Design (2 credits)
- TADD 3800 Tech Toolbox III: After Effects (2 credits)
- TADD 3850 Digital Signage (2 credits)
- TADD 4020 Web & Social Media Design (2 credits)
- TADD 4040 UX Design (2 credits)
- TADD 4700 Pop-up Shop & Visual Merchandising Design (2 credits)
- TADD 4750 Event Design (2 credits)
- TADD 4800 Advanced Typography (2 credits)
- TADD 4850 Advanced Branding & Identity Design (2 credits)

2-D Art & Design Technology *cert*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 18
Required GPA: 2.00

REQUIRED COURSES

Note: The 2D Art and Design Technology certificate is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1150 Drawing Fundamentals (2 credits)
- TADD 1200 Two-Dimensional Visual Foundations (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 2550 Tech Toolbox II: InDesign (2 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
- TADD 3800 Tech Toolbox III: After Effects (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

3-D Art & Design Technology *cert*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Note: The 3D Art and Design Technology certificate is not available to students pursuing the Technology, Art and Design major, Creativity and Innovation emphasis. This certificate is also not available to students pursuing the Art: New Studio Practice major with the 3D Arts emphasis.

Required Credits: 18
Required GPA: 2.00

REQUIRED COURSES

Complete the following courses:

- TADD 1300 Three-Dimensional Visual Foundations (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 3448 Tech Toolbox II: Fusion 360 (2 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
- TADD 3551 Tech Toolbox I: 3ds Max (2 credits)
- TADD 3552 Tech Toolbox II: 3ds Max (2 credits)
- TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Educational Technology *cert*

Required Credits: 19
Required GPA: 2.00

REQUIRED COURSES

Note: The Educational Technology certificate is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Lean Six Sigma *cert*

Required Credits: 30
Required GPA: 2.00

I REQUIRED COURSES

Complete the following courses:

- TADT 3111 Project Management Methodology (3 credits)
- TADT 3112 Leadership in a Team Environment (3 credits)
- TADT 3267 Economic and Cost Analysis (3 credits)
- TADT 3700 Operations Planning and Control (3 credits)
- TADT 3887 Safety and Risk Management (3 credits)
- TADT 4867 Lean Principles and Practices (3 credits)

- TADT 4873 Emphasis Related Capstone (3 credits)
- TADT 4878 Quality Assurance (3 credits)
- TADT 4879 Service Process/Improvement (3 credits)
- TADT 4880 Total Quality Management (3 credits)

II GRADUATION REQUIREMENTS You must pass the Lean Six Sigma (LSS) certification exam that is administered by the Association of Technology Management & Applied Engineering (ATMAE) with green belt level. The ATMAE Lean Six Sigma (LSS)certification exam covers 12 main content areas and is further divided into 88 subcategories. The exam is divided into two main parts: the first part consists of 100 multiple choice questions that are worth one point each. The second part of the exam is composed of 25 multiple choice questions that require an examinee to solve a production or statistical problem that may take several minutes.

I REQUIRED COURSES

Complete the following course:

- TADT 4800 Lean Six Sigma exam (0 credit)

Maker Space Technology *cert*

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 30
Required GPA: 2.00

REQUIRED COURSES

Note: The Maker Space Technology certificate is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis. This certificate is not available to students pursuing the Maker Space Technology minor.

Complete the following courses:

- TADD 1100 Orientation to Technology, Art, and Design (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 3448 Tech Toolbox II: Fusion 360 (2 credits)
- TADD 3480 Ceramics: Hand & Wheel (4 credits)
- TADD 3680 TAD LAB: AutoCAD (2 credits)

Complete 14 credits from the following courses:

- TADD 2670 Painting (4 credits)
- TADD 3557 TAD LAB: Molding & Casting (2 credits)
- TADD 3558 TAD LAB: Machining (2 credits)
- TADD 3559 TAD LAB: Traditional Woods (2 credits)
- TADD 3660 TAD LAB: Welding (2 credits)
- TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
- TADD 3668 TAD LAB: Laser (2 credits)
- TADD 3677 TAD LAB: 3D Printing (2 credits)
- TADD 3678 TAD LAB: CNC Woods (2 credits)
- TADD3689
- TADD 4867 Advanced Studio Practice (2 credits)

Making Money As A Maker *cert*

Required Credits: 25
Required GPA: 2.00

REQUIRED COURSES

Note: The Making Money as a Maker certificate is not available to students pursuing the Technology, Art and Design major with the Creativity and Innovation emphasis.

Complete the following courses:

- TADD 1400 The Art of Napkin Sketching (2 credits)
- TADD 1500 Tech Toolbox I: Illustrator (2 credits)
- TADD 1550 Tech Toolbox I: Photoshop (2 credits)
- TADD 1600 Fundamentals of Digital Photography (2 credits)
- TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
- TADD 1800 Creativity in Action (2 credits)
- TADD 2200 Introduction to Graphic Design (2 credits)
- TADD 3090 Leadership in Creative Industries (2 credits)
- MUS 3150 Arts Organization Management (3 credits)
- MUS 3170 Arts Organization Fundraising and Grant Writing (3 credits)

Complete the following course for 2 credits:

- TADD 4867 Advanced Studio Practice (2 credits)

Technology Manager *cert*

Required Credits: 15
Required GPA: 2.00

I REQUIRED COURSES

Complete the following courses:

- TADT 3111 Project Management Methodology (3 credits)
- TADT 3112 Leadership in a Team Environment (3 credits)
- TADT 3700 Operations Planning and Control (3 credits)
- TADT 3887 Safety and Risk Management (3 credits)
- TADT 4878 Quality Assurance (3 credits)

II GRADUATION REQUIREMENTS You must pass the Certified Technology Manager (CTM) exam that is adminstered by the Association of Technology Management & Applied Engineering (ATMAE). The Certified Technology Manager (CTM) exam is a multiple choice examination with questions on Leadership/Self-Management, Systems, Processes, Operations, People, Project, Quality and Risk.

I REQUIRED COURSES

Complete the following course:

- TADT 4600 Technology Manager exam (0 credit)

Technology, Art and Design - Design Courses

TADD 1100 Orientation to Technology, Art, and Design (2 credits)
The purpose of the Orientation to Technology, Art, and Design course at Bemidji State University is to introduce the School of Technology, Art & Design (The TAD School). Students will explore majors and minors, career options, and salary data for technology, art, and design-related careers. Students will also meet faculty and learn about available resources, clubs, and the junior and senior screening process. Students will become familiar with the facilities in The TAD School.

TADD 1150 Drawing Fundamentals (2 credits)
This course introduces students to classical and contemporary observational drawing techniques and drawing strategies. This class has an emphasis on the understanding of the formal language and the fundamentals of artistic expression. Projects direct observation of nature, still life, and the human form. Assignments are designed to improve drawing skills, engage creative problem-solving, as well as broaden students' knowledge of the cultural/historical relevance of drawing. Students will discuss, analyze, and critique their original drawings and 2D design work with a group of their peers using standard critique procedures. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 1200 Two-Dimensional Visual Foundations (2 credits)
This course is a foundation-level study of the elements of art and principles of design related to two-dimensional visual literacy. Students will explore the concepts of composition through guided projects and demonstrations, discovering a working creative process, an awareness of design in our culture, and awareness of current art and design issues. Students will experience both traditional and digital studio practices. Students will discuss, analyze, and critique their original drawings and 2D design work with a group of their peers using standard critique procedures. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 1300 Three-Dimensional Visual Foundations (2 credits)
This course is a foundation level study of the elements of art and principles of three-dimensional design. Students will use a variety of media and art techniques to explore three-dimensional design; form, line, plane, volume, mass, space, texture, light, and time. Projects emphasize a creative process for problem-solving in three dimensions, as well as a general knowledge of historical and contemporary design issues. Students will discuss, analyze, and critique their original drawings and 2D design work with a group of their peers using standard critique procedures. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 1400 The Art of Napkin Sketching (2 credits)
This course introduces the idea of rough sketching as a communication tool rather than a fine art. Designers can easily find inspiration at any moment. Napkin sketches represent the visualization of spur of the moment inspiration, allowing for the rapid exploration of thoughts and ideas. This approach to drawing aids the expression of feelings, ideas, and even philosophies to others. It is a process that illustrates how people think, what is important to them, and the spirit of their thoughts. This communication tool is often the basis for turning ideas into more meaningful works of art and design. [**Core Curriculum Goal Area 6]

TADD 1500 Tech Toolbox I: Illustrator (2 credits)
In this course students will use Adobe Illustrator for the creation and manipulation of vector graphics. Topics will include: file formats, resolution, illustration and color systems. This course introduces and explains software skills where they would naturally fall into a project workflow. The project-based approach employed in this course gets students an in-depth understanding of the software through step-by-step instructions through every phase of a project.. When students complete the projects in this class, they will have a substantial body of work that should express their understanding of the Adobe Illustrator software.

TADD 1550 Tech Toolbox I: Photoshop (2 credits)
In this course students will use Adobe Photoshop for the creation and manipulation of raster graphics. Topics will include: file formats, resolution, illustration and color systems. This course introduces and explains software skills where they would naturally fall into a project workflow. The project-based approach employed in this course gets students an in-depth understanding of the software through step-by-step instructions through every phase of a project. When students complete the projects in this class, they will have a substantial body of work that should express their understanding of the Adobe Photoshop software.

TADD 1600 Fundamentals of Digital Photography (2 credits)
This course will explore digital photography and imaging techniques with special application to art, design and communication, with an emphasis put on understanding the control and effects of light. Projects will address a range of design, aesthetics, and conceptual issues fundamental to the art of digital photography. Strong emphasis is on the development of both a technical foundation and a critical awareness of the medium as a creative tool. Students will discuss, analyze, and critique their original drawings and 2D design work with a group of their peers using standard critique procedures. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 1700 Presentation Planning, Design, and Delivery (3 credits)
Students will learn to thoroughly plan, design, and deliver a successful live presentation that is human-centered and effective. This course focuses on delivering meaningful presentations with self-awareness, creativity, intentionality, and an authentic personal voice. Students investigate motivation and self-expression. Students will learn to organize, prepare, practice, and deliver short and long-form presentations. This course will introduce students to the theory and practice of visual rhetoric, the art of creating persuasive presentations and delivering them with confidence. [**Core Curriculum Goal Area 1]

TADD 1800 Creativity in Action (2 credits)
Creativity in Action is a course that explores an understanding of creativity and innovation, including leading theorists and the generation of ideas. Questions investigated include who is creative, and why? What does it mean to be creative? Is creativity a general attribute, or is it discipline-specific? Students will learn how creative juices flow and how such creative flow materializes into meaningful ideas. Sure, some ideas are wacky, and some are slightly humorous, but we are looking to develop creativity into solving revolutionary challenges. This course values creativity in action, which goes beyond merely risk-taking and solving problems. [**Core Curriculum Goal Area 6]

TADD 2100 History, Philosophy, and Application of Color (3 credits)
This course is an exploration into the nature and meaning of color using methods of historical, philosophical, and experimental inquiry. Beyond discovering the history and philosophy of color, students in this course will learn how to apply color through creative projects. Learners will study hue, value, and chroma/saturation. Students will discover color systems that allow them to communicate color effectively. By the completion of this course, students will be able to combine colors with technology, art, design, and life. Students will discuss, analyze, and comprehend cultural meanings of color and its experience globally. [**Core Curriculum Goal Areas 6 and 8]

TADD 2200 Introduction to Graphic Design (2 credits)
This course introduces students to the profession of graphic design as a conceptual, visual, and commercial discipline. Through lectures, demonstration, research, and studio experiences, students become familiar with the theoretical and processes of the working graphic designer. Topics include: (1) developing a visual vocabulary, (2) essential elements of art, (3) principles of design, (4) visual communication problem solving, (5) employing a creative design process to create designs that meet clients' needs, and (6) understanding the appropriate software to produce works of graphic design. Prerequisite(s): TADD 1500, TADD 1550.

TADD 2300 Introduction to Typography (2 credits)
Great typography is timeless. While technology is inevitably going to change, setting great type has more to do with creativity and aesthetics than technology. This hands-on course explains clearly how typography works and is an introduction to the expressive and functional use of typography. Topics include typographic terms and techniques, early writing systems as well as computer-generated type and fonts. Activities help students learn the essential concepts and skills needed to use and create type.

TADD 2550 Tech Toolbox II: InDesign (2 credits)
This course is intended to familiarize students with the majority of Adobe InDesign tools, so students can apply the design process in building their design portfolio. Understanding the robust publishing application, Adobe InDesign, will allow students to become more productive by integrating what was learned about vector graphics, raster images, and typography. The relevance of Adobe InDesign to design for traditional print media, screen media, interactive multimedia, and web-based media platforms will be introduced and discussed in this course. The software will be used to create, export, and present all design tutorials and individual projects. The project-based approach employed in this course gets students an in-depth understanding of the software through step-by-step instructions through every phase of a project. The projects in this class reflect a range of different types of work represented in the various academic pathways students may choose to pursue in The School of Technology, Art & Design. When students complete the projects in this class, they will have a substantial body of work that should express their understanding of the Adobe InDesign software. Prerequisite(s): TADD 1500, TADD 1550.

TADD 2670 Painting (4 credits)
This course is an Introduction to the medium of oil painting and to the processes involved in perceptual and conceptual exploration. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 2925 People of the Environment: Technology, Art, and Design Perspective (3 credits)
Discussion and evaluation of current environmental topics related to technology, art, and design. [**Core Curriculum Goal Area 10]

TADD 3020 Typography: Hand Lettering (2 credits)
In this course, students incorporate hand lettering into their illustration process. They explore lettering as free gestural expression, outside of the confines of the computer, made by hand using a variety of traditional media. Students gain an appreciation for hand lettering as an art form, as well as learn how to incorporate hand lettering into their illustrations. Hand lettering is the synthesis of typography and illustration. Prerequisite(s): TADD 2300.

TADD 3040 Typography: Digital Typefaces (2 credits)
This course will provide a theoretical and practical study of the visual nature and expressive potential of digital type forms as a fundamental tool of the graphic designer. Students will practice the preparation and production of digital typographic and graphic assets. Work will include digital illustration, layout, and export for online use as well as for print production with current technologies. Prerequisite(s): TADD 2300

TADD 3090 Leadership in Creative Industries (2 credits)
Whether a student wants to become a Bootstrapping Freelancer, Art Director, or Creative Cottage Industrialist, this Leadership in Creative Industries course effectively matches artists, designers, and makers creative skills and interests with the developing marketplace. Through case studies, guest lectures, and presentations, students will develop creative solutions that support and expand their artistic capacity. Students will learn the theory and practice of the innovative leadership skills essential to lead effectively in creative fields. Through this learning experience, students will understand the creative process, creativity, and the range of variables to lead creative people more effectively.

TADD 3100 Digital Illustration: Vector Art (2 credits)
Vector art is art made with vector illustration software like Adobe Illustrator. Vector artwork is built from vector graphics, which are images created with mathematical formulas. In comparison, raster art (also referred to as bitmaps or raster images) is created with colorized pixels. Enlarge pixel-based art in a raster file too much and it looks jaggy, whereas you can enlarge vector art to any size without negatively affecting its appearance. This resolution independence allows vector art to be used in a variety of forms, from small illustrations to massive billboards. This course is an exploration of digital illustration using vector graphics. Prerequisite(s): TADD 1150, TADD 1500. [**Core Curriculum Goal Area 6]

TADD 3140 Figure Illustration (2 credits)
In this course students will study of the figure and its relationship and application in contemporary Illustration. Course work and assignments will focus on an understanding of anatomy through observation, expressive gesture, and practical applications. Traditional and non-traditional drawing methods will be introduced and explored. Prerequisite(s): TADD 1150. [**Core Curriculum Goal Area 6]

TADD 3160 Spatial Illustration (2 credits)
This course introduces students to the illustrative graphic presentation of spaces, ideas and products. Sketching and refining techniques are practiced in various media including graphite, ink, colored pencils, marker pens, and collage. Perspective drawing tools and techniques are demonstrated and practiced. Conceptualization, production, and presentation techniques are discussed. Prerequisite(s): TADD 1150. [**Core Curriculum Goal Area 6]

TADD 3180 Digital Painting: Raster Art (2 credits)
Raster artwork is any digital art composed of horizontal and vertical rows of pixels. In comparison, vector artwork is digital art composed of mathematical lines and curves. This hands-on course allows students to get creative and productive with brushes and other pixel-based digital tools. This course will explore how to manage layers, effects, selection techniques, working with text, and maximizing colors. This course includes several projects to help students learn how to use digital tools effectively. Once students have completed the course, he or she will be fully capable of using the pixel-based tools to create meaningful digital artwork. Prerequisite(s): TADD 1150, TADD 1550. [**Core Curriculum Goal Area 6]

TADD 3200 Introduction to Model Making (2 credits)
This course exposes students interested in technology, art, and design to learn more about model making. Prior model making experience is helpful, but not required. The course provides a basic introduction to methods of constructing with sheet materials, shaping soft materials to achieve complicated forms, and achieving realistic textures. Students are guided through demonstrations each day. Introduction to Model Making leverages a variety of hand tools and fabrication techniques. Emphasis is on shop safety, hand skills, accuracy, professionalism, and working within specified tolerances to build three-dimensional models.

TADD 3220 Conceptual Prototype Engineering (2 credits)
This course will explore the various steps needed to create a concept/mockup prototype model. Models are design tools and are employed greatly in all aspects of industry. This creative process will include brainstorming, research, sketching, and creation of the model. It aids clients in visualizing and understanding their products' characteristics prior to creation of a high-level prototype. The course will have an emphasis on shop safety, project management and professionalism.

TADD 3240 Prototype Engineering & Detailing (2 credits)
This course is an in-depth look into the finishing and detailing process required of professional prototype models. A finished model must accurately resemble the final prototype in every aspect. Prototype Finishing and Detailing will cover project preparation using various materials, surface finishes/textures and the paints required for the finishing process such as primer, basecoat, single stage and clear coat. The technique of spray finishing will be explored and demonstrated utilizing aerosol, air brush and spray guns. The course will have a strong emphasis on shop safety, project management and professionalism.

TADD 3250 Product Model Making (2 credits)
This course will explore the processes utilized in the creation of a consumer product model by means of a product redesign or new design. This will include an introduction to the basics of form, fit and function and its relationship to the creation of a 3D model. The process will include a scaled 3D drawing to be utilized in the construction of a physical model. The course will require students to utilize many processes, including traditional machining (woods/metals), 3D printing, CNC and other shop equipment. Emphasis will be on shop safety, accuracy, professionalism, project management, problem solving and working within specified tolerances.

TADD 3260 Architectural Model Making (2 credits)
Course Description: This course is the study of architectural model-making techniques, processes, and materials needed to construct a scaled version of a real building project. This model is used as a visual design tool to communicate a client's idea. This course will utilize 2D & 3D software, traditional & non-traditional machining, laser cutter, and various hand skills to construct a professional model. Emphasis will be on shop safety, accuracy, professionalism, project management, and problem-solving.

TADD 3280 Furniture Design & Model Making (2 credits)
This course is the study of model-making techniques, processes, and materials needed to construct a scaled version of furniture. This model is used as a visual design tool to communicate a client's idea. This course will utilize 2D & 3D software, traditional & non-traditional machining, laser cutter, and various hand skills to construct a professional model. Emphasis will be on shop safety, accuracy, professionalism, project management, problem-solving, and working within specified tolerances.

TADD 3300 Wayfinding & Signage Design (2 credits)
Our need to communicate with our fellow humans is fundamental to our well-being and, indeed, our survival. We have long made marks on objects and in our surrounding environment to communicate information visually. These marks communicate meaning, and over time has become a shared language among the people who made and understood them. Signage and wayfinding design are essential and most commonly expressed in unified signs that informationally and visually knit together a site, a collection of related sites, such as regional parks or global corporate facilities, or networks, such as a transportation system. This course focuses on understanding wayfinding and designing signage to communicate our surrounding environment better visually. Prerequisite(s): TADD 2300.

TADD 3320 Package Design (2 credits)
In Packaging Design, as well as Display Design, students are introduced to the process of designing three-dimensional containers, individually, or as systems for the mutual benefit of the end-user and the manufacturer. Emphasis is placed on symbols, shape, color, illustration, and typography and how they relate to three-dimensional problems. Prerequisite(s): TADD 1500.

TADD 3330 K-12 Art Methods (4 credits)
A studio approach to the study of the concepts, methods, and curriculum planning regarding the teaching of visual arts at the K-12 school levels.

TADD 3340 Branding & Identity Design (2 credits)
An introduction to the visual and conceptual problems related to branding. Students also practice digital print production management techniques for all digital assets, and digital layout assembly to create marketing materials in relation to branding. Prerequisite(s): TADD 2200, TADD 2300.

TADD 3350 History of Modern Art & Design: 1820-1950 (3 credits)
This course is a survey of major movements, period tendencies, and key figures in the development of art, graphic design, craft, and industrial design between the early-19th century and 1950. Examination of technological advancements, world historical and art historical trends that surround these movements will also be an important goal in order to gain an effective understanding of this period. Course material seeks to articulate a global perspective of art and design in this era, including Asian, India, African, and South American models. [**Core Curriculum Goal Area(s) 6 & 8]

TADD 3360 History of Contemporary Art & Design: Present-1950 (3 credits)
This course is a survey of the major movements, period tendencies, and key figures in art, graphic design, craft, and industrial design that affect us today. Starting from our current (contemporary) point of view, we discuss existing influences while reviewing the precedents that have been set in the last one hundred years. Students will examine recent, current, and predicted future technologies, as well as current political and economic trends' effects on design trends. Importance will be placed on the influence of historical perspective and future predictions on our current design practice. Course material seeks to articulate a global perspective of art and design in this era, including Asian, India, African, and South American models. [**Core Curriculum Goal Area(s) 6 & 8]

TADD 3380 Designing for Experiences (2 credits)
Experience design is the collection of intentional strategies, touchpoints, and activities chosen to deliver constructions of meaning through engaging interactions. Experiences are what drive the economy. What distinguishes okay companies from truly great companies is the experiences that they provide their customers, as well as their employees. Designing for experiences is about making individuals feel alive and helping organizations take their business to the next level. In this introductory course, students will be exposed to the design, build, execution, evaluation, and management of meaningful experiences. [**BSU Focus: Performance and Participation]

TADD 3400 Sculpture: Experimental (2 credits)
This course introduces students to a variety of methods for combining materials and processes to create sculptural forms. Hands-on projects expand 3D design concepts to include non-traditional media and encourage students to develop their creative ideas. Students will explore contemporary trends and applications, as well as research cultural traditions throughout history. Coursework includes access to a variety of labs and equipment to enhance projects. Students will discuss, analyze, and critique their original drawings and 2D design work with a group of their peers using standard critique procedures. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 3410 Sculpture: Traditional (2 credits)
This course introduces students to a variety of traditional materials and processes common to sculpture. Hands-on projects expand 3D design concepts and encourage students to develop their creative ideas through additive, subtractive and casting methods. Students will explore contemporary trends and applications, as well as research cultures throughout history. Students will discuss, analyze, and critique their original drawings and 2D design work with a group of their peers using standard critique procedures. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 3448 Tech Toolbox II: Fusion 360 (2 credits)
This course introduces students to the use and application of Autodesk Fusion 360 software, which is the key to instant 3D creativity, used by designers, model makers, engineers, and other makers. Students will learn to use Fusion 360 to turn ideas into designs that flow into 3D printing, CNC milling, or injection molding.

TADD 3449 Tech Toolbox II: Premiere Pro (2 credits)
This course is an introduction to video-editing techniques using Adobe Premiere Pro, the industry-leading application for video-editing. This course utilizes and expands student designers' skillset. Students will learn: to transform raw footage into impactful stories, how to edit video and audio, correct color, add titles and effects, and more. Prerequisite(s): TADD 1550.

TADD 3460 Printmaking: Traditional (2 credits)
An introduction to the concepts and techniques of relief printmaking and the aesthetic issues within traditional printmaking practices. Students will evaluate visual art within historical and contemporary contexts. Students will develop image-making and studio processes skills through several printmaking projects. Reading, discussions, and demonstrations will support this development. Students will discuss, analyze, and critique their original drawings and 2D design work with a group of their peers using standard critique procedures. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 3470 Printmaking: Experimental (2 credits)
This course will introduce students to the concepts and techniques of silkscreen and related stencil printing forms. Demonstration, discussion, sketching, art production, and critique will support development of students' skills. Students will practice working in a shared studio environment, solving layered design issues, and evaluating silkscreen art within historical and contemporary contexts. Students will discuss, analyze, and critique their original drawings and 2D design work with a group of their peers using standard critique procedures. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 3480 Ceramics: Hand & Wheel (4 credits)
Three-dimensional visual design and problem-solving is integrated with the introduction to basic hand-forming methods, glazing, and firing of ceramic forms. This course is an introduction to the functional and sculptural process of ceramics using various hand-building techniques. Students will explore processes including pinch, coil, and slab building, as well as gain an understanding of the tools and methods involved in hand building. Students will learn about glazing and how color and surface design can bring life to their unique works of art. [**Core Curriculum Goal Area(s) 6, BSU Focus: Performance and Participation]

TADD 3551 Tech Toolbox I: 3ds Max (2 credits)
This course is an introductory software-based course focusing on the 3ds Max design workflow as it relates to basic modeling, necessary materials, and essential lighting techniques. Students will learn how to use this software related to architectural exhibits and spaces, as well as model making, graphic design, and motion graphics. This course is just the beginning of learning dozens of features and techniques that students will someday master, from sculpting and texturing to lighting and rendering.

TADD 3552 Tech Toolbox II: 3ds Max (2 credits)
This course is a level two software-based course focusing on the 3ds Max design workflow as it relates to advanced materials, lighting and modeling techniques. Prerequisite(s): TADD 3551.

TADD 3553 Tech Toolbox III: 3ds Max (2 credits)
This course is a level three software-based course focusing on the 3ds Max design workflow as it relates to advanced output options. Course also serves as an introduction to 3D game engines, augmented and virtual reality. Prerequisite(s): TADD 3552.

TADD 3557 TAD LAB: Molding & Casting (2 credits)
In this course, students will learn how to make molds that will allow them to cast multiples of practically any object using a variety of materials. Students will gain a solid understanding of fundamental techniques that will empower them to tackle almost any mold-making project. Students will discover what undercuts are and how to recognize them on their models; they will determine what kind of mold and mold material to use and how to build and adequately seal mold walls. Mold and cast your way to a customized world!

TADD 3558 TAD LAB: Machining (2 credits)
This course introduces students to the basics of operating a lathe and a milling machine. Students will learn essential machine and lab safety procedures, use of bench tools, layout tools, drill presses, precision measurement tools, and various hand tools related to the machine shop. Students will study the vertical milling machine and the horizontal lathe as well as their components and controls. They will gain an understanding of speeds and feeds, utilizing various tools and tool holders. They will identify basic tool geometry, and the use of standard lathe spindle tooling.

TADD 3559 TAD LAB: Traditional Woods (2 credits)
In this foundational woodworking course, students will learn the basics of the traditional woodshop. This course serves as the prerequisite for makers to reach their full potential. Students will go through a learning process grounded in understanding hand tools and grow into learning more high-tech woodshop processes. Once students complete this foundational course, they will have the skills and confidence to continue excelling as a maker in the woodshop.

TADD 3660 TAD LAB: Welding (2 credits)
This course will provide students with entry-level skills in Welding. This course includes basic welding theory, safety in welding, introduction to oxygen, basic weld symbols for blueprint reading. Students will learn oxyacetylene welding using the cutting torch and brazing, electric arc and other welding techniques, and stick welding with a variety of electrodes in the flat and horizontal fillet positions.

TADD 3667 TAD LAB: Finishing & Aesthetics (2 credits)
The purpose of this course is to provide the student an understanding of materials, principles, and techniques of spray finishing required to complete a professional form. Processes may include model construction, surface preparation, materials selection and paint application.

TADD 3668 TAD LAB: Laser (2 credits)
There has never been a better time to learn about and try Laser cutting and etching. This course draws a roadmap for getting started with Laser, which is also known as additive manufacturing). This course will discuss the different Laser operations used for Vector graphics (cutting) and Raster graphics (etching). Students will learn how to properly prepare digital files for projects of their own creation and operate laser equipment. Knowledge of materials and how to apply them is also an important part of this course. This TAD Lab is a hands-on production-based course that walks students through a step-by-step process of Laser cutting.

TADD 3677 TAD LAB: 3D Printing (2 credits)
There has never been a better time to learn about and try 3D printing. This course draws a roadmap for getting started with 3D printing, which is also known as additive manufacturing). This course will discuss the different 3D Printers used for 3D modeling (filament-based, laser sintering, and more). This TAD Lab is a hands-on production-based course that walks students through a step-by-step process of 3D printing.

TADD 3678 TAD LAB: CNC Woods (2 credits)
This course is designed to introduce students to vector-based cutting operations in wood and paper products. Students will apply knowledge gained in the classroom to sketch, create measured files in various software and execute their assignments using a variety of CNC equipment available to them. Laser cutting/etching, cardboard cutting/folding, and wood CNC milling are basic operations we will cover.

TADD 3679 TAD LAB: CNC Metals (2 credits)
This course is designed to introduce students to vector-based cutting operations in metal. Students will apply knowledge gained in the classroom to sketch, create measured files in various software and execute their assignments using a variety of CNC equipment available to them.

TADD 3680 TAD LAB: AutoCAD (2 credits)
This course introduces students to the use and application of Autodesk AutoCAD software. AutoCAD is used by architects, designers, model makers, engineers, and other makers. Students will learn to use AutoCAD to turn ideas into designs that flow into 3D modeling and other output formats.

TADD 3700 Materials, Lighting, and Structures (2 credits)
This course is an overview of the materials, lighting, and structures used in the exhibit industry. Students will explore fabric, aluminum extrusion systems, printing substrates, sustainable options, lighting technologies, and building techniques.

TADD 3750 Tradeshow Exhibit Design (2 credits)
This course aims to help make students better understand the art of creating immersive experiences that tell a story. Tradeshows are not new but designing meaningful experiences with intentionality is an entirely new industry. This form of spatial storytelling takes guests through meaningful experiences that incorporate graphics, spatial planning, architecture, modern media, theatrical arts, interaction, entertainment, marketing, learning, lighting, engineering, networking, personal growth, and more. This course focuses on designing immersive and experiential tradeshow exhibits for meaningful social interaction. This class will assume that students have had some experience design coursework under their belt and exposed to the basics of Two and Three- Dimensional Design. This course will move students into more advanced levels of experience design. Above all, this course encourages students to think about design by putting the tradeshow attendee at the center of their constructed experience. Prerequisite(s): TADD 3552.

TADD 3780 Museum Experience Design (2 credits)
In this course, students will gain a comprehensive understanding of the different kinds of museums (permanent, temporary, and travel), their various missions, and their experiential characteristics (visitors, research, theories, history, techniques, institutional challenges, educational vision, and public service) common to museums. Students will also explore the various technical and aesthetic approaches for designing museum experiences. The primary focus will be the importance of quality signage, graphics, and engaging media for museums. Prerequisite(s): TADD 3380, TADD 3552.

TADD 3800 Tech Toolbox III: After Effects (2 credits)
This course builds off the video-editing techniques learned in Adobe Premiere Pro, the industry-leading application for video-editing. After Effects adds visual effects, motion graphics, and compositing capabilities to the video-editing skillset. Students will learn: to enhance videographic storytelling with techniques such as keying, tracking, compositing, animation and more. Prerequisite(s): TADD 3449.

TADD 3850 Digital Signage (2 credits)
Every day new digital screens are being installed at locations in every industry. However, the process of developing and deploying engaging digital signage is much more complicated than simply hanging a screen and turning it on. This production-based course will guide students through the process of creating an effective digital signage strategy, from understanding the user and the environment to building experiential content. Learning will focus on storytelling and effective communication through the creation of digital signage and motion graphics. Students will explore the software, tools, and techniques needed to start designing meaningful digital signs in 2D and 3D. Prerequisite(s): TADD 2300.

TADD 3899 Junior Culmination: Internship Planning (2 credits)
In this course, students learn the importance of the internship game, which will give the tools needed to get an internship and the necessary actions for turning that internship into an eventual career. This course will give student artists and designers professional guidance to them to where they want to be after graduation. Students will learn how to apply entrepreneurial strategies to their own life, their internship decisions, and their eventual career. Whether students want to work for a giant multinational corporation, a small local business, or launch their own business, this course will provide vital information and help them develop a personalized plan for their future. Prerequisite(s): Instructor consent.

TADD 4020 Web & Social Media Design (2 credits)
In this course, students will discover how to communicate creatively through websites and social media platforms. Students will learn about the key features on Facebook, Twitter, Instagram, and other platforms to grow an online presence. This course examines how to designs websites and social media platforms to extend experiences beyond the face-to-face world and into the virtual world. By the end of this course, students will have a solid introduction to these key platforms so that they can design a virtual strategy that increases brand awareness and maximizes opportunities for meaningful experiences. Prerequisite(s): TADD 2300.

TADD 4040 UX Design (2 credits)
A good user experience design (UX Design) keeps visitors engaged. A bad one will make them go somewhere else. This class teaches students how to apply simple UX design principles to make users behave in the way that designers want and expect when creating compelling digital experiences. Students will learn Adobe XD's capabilities and features to go from concept to interactive prototype. Prerequisite(s): TADD 3850.

TADD 4120 Illustrative Storytelling (2 credits)
The course will integrate image and text within a design context to promote a comprehensive understanding of the role of the illustrator, the art director, and the designer. Students are required to think beyond the content and aesthetics of an image and consider the formal and conceptual context of its application. Prerequisite(s) TADD 3100, TADD 3140, TADD 3160, TADD 3180.

TADD 4190 Animated Illustration (2 credits)
This course allows students to get creative and transform concepts into meaningful 2D animations. Students will investigate the concepts and tools used for creating time and motion-based animations. Prerequisite(s): TADD 3100, TADD 3140, TADD 3160, TADD 3180.

TADD 4430 Sculpture: CNC (2 credits)
This course introduces students to a variety CNC processes common to sculpture/design. Hands-on projects expand 3D design concepts through the use of design software and a variety of machines. Students will explore contemporary trends and applications, as well as research cultural traditions throughout history. Coursework includes access to TAD Lab facilities. TADD 3448 recommended.

TADD 4630 Topics in Technology, Art & Design (1-4 credits)
Research, advanced exploration, and/or applied study of various topics related to technology, art & design.

TADD 4700 Pop-up Shop & Visual Merchandising Design (2 credits)
Pop-up shops are the temporary use of physical space to create a meaningful experience with current or potential customers. A pop-up shop allows an organization to communicate brand promises through the use of a unique and engaging physical environment while creating an immersive shopping experience. Designing pop-up shops and visual merchandising displays into unforgettable experiences is what this course is all about. Prerequisite(s): TADD 3552.

TADD 4750 Event Design (2 credits)
Event design is the application of form and experience processes to invent festivals, conferences, ceremonies, weddings, formal parties, concerts, tradeshows, or large conventions. It involves studying the brand, identifying its target audience, devising the event concept, and imagining all aspects before actually building and launching the event. In this course, students will learn a systematic visual approach to event design grounded in experience and based on stakeholder needs. Prerequisite(s): TADD 3380, TADD 3552.

TADD 4800 Advanced Typography (2 credits)
This class is an advanced exploration of the elements and forms of typography. We will address the role of these elements as highly abstracted symbols that nevertheless function as the vehicle for the most literal and expressive communication. This class is an opportunity for advanced design students to develop portfolio quality pieces which demonstrate their breadth of expression as well as their personal aesthetic of type. Prerequisite(s): TADD 3020, TADD 3040.

TADD 4810 Advanced Extended Reality (2 credits)
This course turns student's understanding of Virtual Reality (VR), Augmented reality (AR), and Mixed Reality (MR) into advanced knowledge of Extended Reality (XR). This course goes beyond the latest developments in hardware, software, equipment, and computing and their impact on creating meaningful human-centered experiences. Students will learn how knowledge in XR can be maximized and applied in the real world, ultimately making students more employable after graduation. Prerequisite(s): TADD 3553.

TADD 4820 Advanced Experience Design (2 credits)
This course aims to help students create immersive experiences that tell meaningful stories. Designing such meaningful experiences with intentionality is an advanced art form. This advanced form of spatial storytelling takes guests through meaningful experiences that incorporate graphics, spatial planning, architecture, modern media, theatrical arts, interaction, entertainment, marketing, learning, lighting, engineering, networking, personal growth, and more. This advanced course assumes that students have had most other design-related coursework under their belt. Above all, this course prepares students for employment and encourages them to put the guest at the center of the experience. Prerequisite(s): TADD 3750, TADD 3780.

TADD 4830 Advanced Event Planning & Project Management (2 credits)
Advanced Event Planning & Project Management is a culminating course that provides students with the opportunity to apply the skills and knowledge learned from previous courses. Students will increase their level of expertise and confidence through the planning and managing of a simulated educational project. Students in this class will learn to work in a team to develop the conceptualization of an event and manage it to its completion. Successful students in this class will be expected to employ all the communication, design, management, and planning skills learned in previous courses. Students will understand deadlines as an essential component in this course and to utilize external vendors to ensure a successful and enjoyable event that meets goals and expectations. Prerequisite(s): TADT 1111.

TADD 4840 Advanced Interactive Multimedia Design (2 credits)
The future of typography and motion graphics is here. Type is conquering motion, space, and interaction to play across all media. Imagine type that is alive and dynamic, that adapts to the environment. This Advanced Interactive Multimedia course provides students with this form of storytelling expressed in a variety of visual media and environments, including screen-based, print-based, and emerging media. This course explores the new ecosystems that typography now resides in and the tools that designers can use to develop meaningful interactive content and experiences. Students will also learn about the exciting career opportunities in this cutting-edge space. The goal of this course is for students to build from previous interactive and multimedia coursework and develop professional portfolio pieces through a production-based learning experience. Prerequisite(s): TADD 4040.

TADD 4850 Advanced Branding & Identity Design (2 credits)
This course is an advanced theoretical study of the visual and conceptual problems related to branding. Students also practice digital print production management techniques for all digital assets, and digital layout assembly to create full visual identity systems, and related marketing materials. Prerequisite(s): TADD 3340.

TADD 4860 Advanced Prototype Engineering & Model Making (2 credits)
In this course the student will work in collaboration with an industry professional to construct a physical architectural or prototype model. This project will be determined by the student¿s desired career path. This project will require a culmination of skill sets learned to complete the project as well as the appropriate use of materials, processes and interpretation of client documentation. Emphasis will be on shop safety, accuracy, and professionalism, and project management, problem solving and working within specified tolerances. Prerequisite(s): Senior status.

TADD 4867 Advanced Studio Practice (2 credits)
This Studio-based course is project-based. This format is grounded in sound adult learning theory (andragogy) and is often more popular with students than traditional lecture-based format. In this course, students will work on a complex and demanding project for the entire semester or predetermined timeline. The goal of this course is for students to explore an advanced topic of personal interest. The student will guide much of the coursework and the direction of the project. Therefore, this format requires students to take responsibility for their learning and their time. The course facilitator is there to help students start the project, provide essential resources, and be on hand as a resource for students to use. The course facilitator is a mentor in the process, acting as a learning guide, not an authority. Course is repeatable for up to 12 credits. Prerequisite(s): TAD Common Core or instructor consent.

TADD 4870 Advanced 3D Arts (2 credits)
This course is an advanced level exploration of conceptual approaches to the creation of sculptural forms in addition to continued exploration of processes and techniques on an advanced level. This course will also give students the opportunity to create significant works to add to a senior portfolio. Prerequisite(s): TADD 4430, Instructor consent.

TADD 4880 Advanced Illustration (2 credits)
This course is an advanced level exploration of conceptual approaches to the creation of illustration in addition to continued exploration of processes and techniques on an advanced level. This course will also give students the opportunity to create significant works to add to a senior portfolio. Prerequisite(s): TADD 4120.

TADD 4897 Senior Exhibition (0 credit)
Students will work with the professor to create a solo or team art exhibition.

TADD 4898 Advanced Graphic Design (2 credits)
This course is an opportunity for students to achieve and become creative graphic design professionals. Before students take this course, they should have learned all the foundational skills in Graphic Design. The intension of this course to take those foundational skills to the next level and become a unique design professional that stands out in a seemingly overcrowded industry. From day one of this course, students will hit the ground running, and ignite their inspiration into creative ideas. This course focuses on becoming a design professional that utilizes and expands students' design skills and abilities through a professionally crafted portfolio. Prerequisite(s): TADD 4800.

TADD 4899 Senior Culmination: Career Planning (2 credits)
In this course, students will explore the volatile, and sometimes scary, employment landscape. Students will learn the importance of creating a career plan that allows them to pursue their future. An effective career plan will allow students to determine essential goals, articulate a pathway reach goals, and assemble a body of work (portfolio) to market themselves to key stakeholders. This course will give student artists and designers professional guidance to land their next opportunity, whether students want to work for a giant multinational corporation, a small local business, or launch their own business. Topics will include dream jobs, graduate school, lifelong learning, career planning, negotiation, interviewing, monetization of passion, personal branding, networking, presentation skills, and how to build a compelling portfolio. Prerequisite(s): Instructor consent.

TADD 4917 DIS Tchg Assoc | (1-2 credits)
Directed Independent Study | Teaching Associate

All-University Courses

The course numbers listed below, not always included in the semester class schedule, may be registered for by consent of the advisor, instructor, or department chair, or may be assigned by the department when warranted. Individual registration requires previous arrangement by the student and the completion of any required form or planning outline as well as any prerequisites.

1910, 2910, 3910, 4910 DIRECTED INDEPENDENT STUDY
1920, 2920, 3920, 4920 DIRECTED GROUP STUDY

1930, 2930, 3930, 4930 EXPERIMENTAL COURSE
1940, 2940, 3940, 4940 IN-SERVICE COURSE
1950, 2950, 3950, 4950 WORKSHOP, INSTITUTE, TOUR
1960, 2960, 3960, 4960 SPECIAL PURPOSE INSTRUCTION
1970, 2970, 3970, 4970 INTERNSHIP
1980, 2980, 3980, 4980 RESEARCH
1990, 2990, 3990, 4990 THESIS

Technology, Art and Design -Technology Courses

TADT 1109 Computer Applications for Project Managers (3 credits)
This course is an overview of computer applications that are used by Technology, Operations, and Project Managers. The focus of this class is placed on Microsoft Project, Microsoft Excel, and Procore. The course will also provide a review on the basics of Microsoft word and PowerPoint. In this course, students will use these applications to practice spreadsheet using excel, presentation software using PowerPoint, and database using Procore. Students will be familiar with all aspects of project management including project definition, methods and strategy, resource scheduling and allocation, leadership, managing teams, partnering, minimizing risks, benchmarking project progress and performance and project termination and review.

TADT 1111 Introduction to Project Management (3 credits)
Introduction to the principles and practices associated with project management in a professional environment, to include the utilization of project management methodology in support of planning the participants academic career as a student at Bemidji State University. In further support of the participants academic career, the course will also emphasize professional communications in various written and electronic formats.

TADT 1210 Introduction to Manufacturing Processes I (3 credits)
An introduction to manufacturing processes including; welding, metal forming, centrifugal casting, injection/blow molding, silicone molding/resin casting, and vacuum forming. This course will utilize various types of metals, plastic, and resin materials to construct projects.

TADT 1220 Introduction to Manufacturing Processes II (3 credits)
A comprehensive study of the separating processes which occur in manufacturing production. Traditional and non-traditional processes are introduced, along with the primary materials which are utilized in the separation processes.

TADT 1227 Fabricating Fundamentals (3 credits)
Overview of fundamental lab processes related to extremely diversified industry that produces products in a production environment. Traditional and Non-Traditional processes are introduced along with theories, rules and practices associated with fabrication.

TADT 1315 Energy and Power Technology (3 credits)
Survey of types and sources of energy. Addresses the transmission and application of energy and power systems in a variety of construction and industrial applications, including mechanical, fluid, and renewable technologies such as solar, wind and geothermal.

TADT 1350 Electrical/Electronic Technology (3 credits)
Fundamental principles of electricity and electronics. Various topics are explored including basic circuits, transformers and motors.

TADT 1450 Introduction to Product Development (3 credits)
This course is an introduction to three-dimensional communication techniques for the model making profession. Utilizing hand tools, project construction will include an awareness of attention to detail, design and technical problem solving. Prerequisite: TADT 1210, TADT 1220.

TADT 1460 2D Graphics And Laser Etching (3 credits)
An introduction to the principles and practices of technical drawing. The course provides a working familiarity with computer-aided design and drafting through the study of multi-view, pictorial drawing systems, and their applications to laser etching.

TADT 1464 Engineering Technology Project I (3 credits)
This is a project based course that introduces fundamental concepts of engineering design, effective teams, lab safety, and engineering ethics. Basic mechanical systems and simple machines will also be covered. Students are required to demonstrate competency in scheduling, applying fabrication techniques, and documentation. Projects are presented at the end of the semester. Prerequisite: TADT 1210, PHYS 1101.

TADT 2100 Impact Of Technology, Art & Design (2 credits)
Defines technology and examines the relationship between technology, human civilization, and other disciplines. Course includes a focus on the related social, cultural, environmental and economic impacts of technology and encourages students to understand the development of technology from the earliest civilizations to implications for the 21st Century. This course is designed primarily for the liberal education program. [**Core Curriculum Goal Area(s) 5 & 9]

TADT 2211 Introduction to Cost Management (3 credits)
This course is an overview of the application of cost management in Technology, Operations, and Project Management fields. The emphasis of this course is on project operations budgeting and costs control. The process of financial decision making will be discussed in this course. Topics include project costing methodologies, value and non-value added cost analysis, breakdown structure cost analysis, service industry costing, and project cost evaluation.

TADT 2217 Strength of Materials (3 credits)
An introduction to stress, strain, and deformation analysis of materials subjected to axial, torsional, and bending loads. Basic mechanics concepts such as defects, elasticity, plasticity, and failure are introduced. Prerequisite: PHYS 1101.

TADT 2250 Built Environment (3 credits)
A broad study of the built environment and the technology that was used to create it. Emphasis is given to residential and light commercial applications of print-reading, materials, and methods, while exploring past and present construction technologies. Prerequisite: TADT 1220.

TADT 2252 Construction Materials and Methods (3 credits)
This course is a broad study of materials and methods used in the building and the construction industry. Emphasizing common construction systems such as light wood frame, masonry bearing wall, steel frame, and reinforced concrete construction, including information on building materials properties; "pre-engineered" building components; sustainability issues; and the latest building codes and standards. Prerequisite: TADT 1460, TADT 2250 or consent of the instructor.

TADT 2310 Small Gasoline Engines (3 credits)
The theory and operation of small 2 cycle and 4 cycle engines. Laboratory exercises and rebuilding of components and engines. Prerequisite: TADT 1315. (Might not be offered every year.)

TADT 2370 Automation Technology (3 credits)
An introduction to the field of automation as found in the industrial environment. Concepts of CNC, CAM PLC's, vision systems, bar coding and robotics are explored.

TADT 2450 Product Finishing & Aesthetics (3 credits)
The purpose of this course is to provide the student an understanding of materials, principles and techniques of spray finishing required to complete a professional model. Processes may include model construction, surface preparation, materials selection and paint application. Prerequisites: TADT 1210, TADT 1220, TADT 1460.

TADT 2461 Parametric 3D Modeling (3 credits)
Examines current topics, research, exploration, testing, and evaluation of computer-aided drafting and design programs for Windows computers. Prerequisites: TADT 1460 or consent of instructor.

TADT 2465 Engineering Technology Project II (3 credits)
This is a project based course that builds on topics covered in Engineering Project 1. Students will be introduced to electrical safety, electrical schematics, electrical circuits, various electrical components, and electrical measuring equipment. Students are required to demonstrate competency in applying fabrication and analysis techniques and setting performance specifications, meeting these specifications, and documenting their designs. Projects are presented at the end of the semester. Prerequisite: PHYS 1102, TADT 1220, TADT 1460 and TADT 1464.

TADT 2877 Engineering Problem Solving (3 credits)
Investigates the terminology, concepts, and analytical techniques essential to solving complex problems which occur in manufacturing.

TADT 2931 Experimental Course (3 credits)
A course proposed for inclusion in the University curriculum. May not be offered more than two times as an experimental course.

TADT 3100 Principles of Professional Development (3 credits)
An overview for professionals in the fields of Technology & Management. The student will research and report on such topics as historical and future technological developments, personality inventories, trade and professional organizations, professional publications, and personal professional development plans. Educational degree requirements and policies to meet development plans are also reviewed. Prerequisites: Junior status or consent of instructor.

TADT 3111 Project Management Methodology (3 credits)
This course is intended to provide the learner with the understanding, tools and techniques necessary to effectively plan, coordinate and manage the combination of people, systems and other resources required to complete a project in alignment with established goals, standards and deadlines. In addition, elements of leadership principles and practices will be studied to support team development and project success.

TADT 3112 Leadership in a Team Environment (3 credits)
This course is intended to provide engineering and technology management students with the understanding, strategies, and methods necessary to engage, influence, and empower followers in the successful accomplishment of organizational goals in a team-based environment. Prerequisites: TADT1111 or TADT 3111.

TADT 3217 Materials Science and Metallurgy (3 credits)
This course focuses on the properties of materials and is intended as an introduction to materials science. Materials are used in everything and many major engineering problems are materials problems. This course will provide students with the skills and knowledge necessary to solve many of these problems. This is primarily a lab based course that focuses on mechanical testing and structural analysis of polymers, metals, and ceramics. Prerequisites: TADT 2217, TADT 2877, MATH 1470, and junior status.

TADT 3240 Construction Materials and Practices (3 credits)
Comprehensive study of construction materials, their characteristics, applications and testing. Prerequisite(s): Junior status or consent of instructor.

TADT 3250 Print Reading and Project Documentation (3 credits)
An introductory course in production specifications and contract documentation usage. The course includes the study of materials, methods and labor functions as they relate to use of specifications, documentation and drawings in construction related industries. Prerequisite: TADT 2252 or consent of instructor.

TADT 3260 Project Bidding and Estimating (3 credits)
A foundational course in the analysis and determination of construction and manufacturing project costs. Bidding strategies and proposals; material, equipment and labor estimates, as well as overhead and profit are examined. Prerequisite: TADT 3250 or consent of instructor.

TADT 3267 Economic and Cost Analysis (3 credits)
Introduction to the methods for determining costs related to developing and producing a product, for analyzing the present and future value of liquid and physical assets, and for analyzing the present and future value of a time series of payments. Other topics include basic accounting practices, cost estimating, and forecasting. Prerequisite: Junior status or consent of instructor.

TADT 3277 Programmable Logic Controllers (3 credits)
This course offers students an in depth exposure to programmable logic controller (PLC) devices, the main components of PLC systems, and DC/AC motor and fluid power. The course will cover configuration and programming of PLCs for motor and hydraulic system control using various programming tools. Prerequisite: PHYS 1102 and junior status.

TADT 3330 Industrial Automation (3 credits)
The integration of robotics and automated controls into manufacturing operations. Topics include planning for, specifying, and integrating sensors, actuators, part feeding devices, fixtures, material handling equipment, robotics, and programmable logic controllers in an automated environment, such as a work cell or an assembly line. Two hours lecture and two hours lab per week. Prerequisite(s): Junior status or consent of instructor.

TADT 3350 General Power (3 credits)
Theory and operating principles of internal combustion engines with over fifty cubic inches of displacement. Laboratory experiences include rebuilding procedures and related technical specifications and data. Prerequisite(s): Junior status or consent of instructor.

TADT 3462 Computer Controlled Machining (3 credits)
Introduction to computer-controlled machining operations including manual programming and programming using CAM application for CNC (computer controlled machining). Emphasis on tools and materials are applied in a wide variety of manufacturing and modeling operations. Prerequisite: TADT 2461.

TADT 3470 Concept to Prototype Model (3 credits)
Construct a prototype model with emphasis on 3D parametric drawing, 3D printing technology and various machining processes. Project will concentrate on form, fit, function, structural integrity and optimization of the design needed to shape concepts and test ideas. Prerequisite: TADT 1450, TADT 2450, TADT 3462.

TADT 3537 Industrial Design/Innovation (3 credits)
Exploration of the history, philosophy and application of industrial design. Includes defining specific customer needs and the research, identification, testing, assessment and implementation of effective solutions to technological problems. Also included is the development of a design proposal, written and graphic documentation, and the ethical, environmental, social and economic impacts of design solutions. Incorporates the role, purpose and relationship of innovation in business and industry with the design process. Prerequisite(s): Junior status or consent of instructor.

TADT 3570 Commercial Architecture (3 credits)
Planning and design of commercial buildings and their structural systems, city and industrial planning, and landscaping. Might not be offered every year. Prerequisite(s): Junior status or consent of instructor.

TADT 3610 Industrial Prototypes (3 credits)
Development of industrial quality prototypes from engineering or designer prints. Includes the selection of materials and processes for production feasibility and market testing prototypes. Prerequisites: Junior status or consent of instructor.

TADT 3700 Operations Planning and Control (3 credits)
The concepts, tools, techniques, and quantitative methods used to plan for and control operations in the production of goods and services. Topics include, but are not limited to, traditional inventory management, just-in-time inventory, materials- and enterprise-resource planning, facilities location and layout, process strategies, aggregate planning, scheduling, maintenance and reliability, project management, and supply chain management. Prerequisite: Junior status or consent of instructor.

TADT 3850 Foundation of Technology Education (2 credits)
Survey of the history, philosophy, curriculum, and instructional practices of the industrial technology education field. Emphasizes the goals and objectives of technology education programs in the K-12 public school system. Includes current issues, career options, professional organizations, and licensure requirements. Prerequisite(s): Junior status or consent of instructor.

TADT 3857 Methods of Teaching Industrial Technology/Vocational Education (3 credits)
Approaches to teaching technology education included the philosophy, innovative approaches, classroom and laboratory strategies and methodology. Includes program visitation, evaluation and micro-teaching.

TADT 3860 Logistics in Supply Chain (3 credits)
This course provides an overview of all modes of transportation and their institutional and operational environments. The organizational logistics function and the relationship to the distribution channels is also emphasized. The legal issues and concepts germane to the Transportation and Logistics field, including contracts, liability, insurance requirements, environmental and security regulatory compliance. Prerequisite(s): TADT 3700.

TADT 3878 Industrial/Engineering Production Studies (3 credits)
Study and visitations/assessments of the various aspects of industry, particularly in the engineering and technology management fields. The strategy of benchmarking will be used as a primary tool to complete course research. Prerequisites: Junior status or consent of instructor.

TADT 3879 Performance Measurement (3 credits)
The establishment of time standards essential to the decision making, forecasting, and process control efforts of manufacturing engineering groups and operations management. Prerequisites: Junior status or consent of instructor.

TADT 3885 Technical Sales, Service and Training (3 credits)
The philosophy and practice of sales and service in a technical environment, including the methodology, planning and design of sales activity, and developing technical proposals and presentations. Course also examines aspects of assessing, designing and implementing human resource training programs. Prerequisites: Junior status or consent of instructor.

TADT 3887 Safety and Risk Management (3 credits)
Introduction to the general principles, regulations, responsibilities, policies and practices associated with Safety and Risk Management from the perspective of a manager in operations, facilities and/or construction. Prerequisites: Junior status or consent of the instructor

TADT 3897 Ergonomics and Human Factors (3 credits)
Students learn how to apply human-centered design principles to minimize the risk of harm while simultaneously facilitating the use of man-made artifacts. These principles may be applied in the work environment to design or improve work methods and work environments. They may also be used in the design of consumer goods. Includes a course project and lab activities. Two hours lecture and two hours lab per week. Prerequisites: Junior status or consent of instructor.

TADT 3970 Internship (1-3 credits)
Internship

TADT 4259 Construction Management (3 credits)
An advanced study of construction project planning, contracting, and supervision. The management functions of a construction business environment are emphasized. Attention is given to the differences between construction management and construction contracting as well as a focus on the concept of green building. Prerequisites: Junior status or consent of instructor.

TADT 4260 Computerized Construction Estimating (3 credits)
An exploration and study of computerized construction estimating methods, software, and approaches for estimating, planning, and documenting construction projects. Prerequisite: TADT 3260 or consent of instructor.

TADT 4340 Industrial Controls (4 credits)
A study of industrial controls including electromechanical devices, programmable logic controllers and computer control. Prerequisites: Junior status or consent of instructor.

TADT 4349 Principles of Technology (3 credits)
A laboratory based study of electrical, mechanical, thermal and optical systems which combines theory and practice to develop an understanding of technological systems based on mathematical and physical models. Prerequisites: Junior status or consent of instructor.

TADT 4370 Computer Integrated Manufacturing (3 credits)
Study of how to synchronize operations in an environment that incorporates automated production equipment, material handling systems, plant control systems, design engineering functions, production- and inventory-control systems, and various management functions. Prerequisites: Junior status or consent of instructor.

TADT 4385 Sustainability and Emerging Technologies (3 credits)
A study of sustainability and the emerging technologies that support its major concepts in a laboratory-based course. Students will experience a variety of emerging technologies and understand how such content may be applied in design, engineering, manufacturing and/or the construction industries. Prerequisites: Junior status or consent of instructor.

TADT 4460 Design for Manufacturability (3 credits)
A study of the tools, techniques, and guidelines used to design parts and products, while minimizing costs, facilitating manufacturing operations, maximizing quality and functionality, and supporting modern production management techniques. Prerequisites: Junior status or consent of instructor.

TADT 4464 Machine Element Design (3 credits)
Application of mechanical principles, such as physics, stress analysis, motion analysis, mechanical power, fluid power, fastening and joining techniques, and electric motor selection/control to the design of components and mechanisms. Prerequisites: Junior status or consent of instructor.

TADT 4465 Mechanical Analysis of Parametric 3D Models (3 credits)
The use of a parametric 3D CAD package, in conjunction with either add-on or third-party software applications, to create virtual part and assembly models, and to analyze their physical performance using computer simulation techniques. Topics include shape optimization, and stress-, fatigue-, and kinematic-analysis, plus additional analysis techniques as planned by the instructor. Prerequisites: Junior status or consent of instructor.

TADT 4589 Advanced Prototype Project (3 credits)
Capstone Project: Construct a highly detailed professional model utilizing a culmination of skills including traditional, non-traditional and 3D printing technologies. Project documentation will be a high priority. This project may be constructed in collaboration with an industry professional. Prerequisites: TADT 3470 and Senior level status or consent of instructor.

TADT 4600 Technology Manager exam (0 credit)
A course designed to document a student's successful completion of the Technology Manager Certificate exam. The exam is the final requirement for the certificate.

TADT 4727 Procurement and Inventory Control (3 credits)
This course focus on global aspects of supply chain technology with primary emphasis on procurement and inventory management. Specific issues in include supplier evaluation and selection, benefits and risks in outsourcing, contracts and legal terms, negotiation, purchasing ethics, inventory cost components, types and uses of inventory, planning inventory levels, maintaining inventory accuracy, and inventory replenishment policies, metrics and roles associated with inventory management. Prerequisite(s): TADT 3700.

TADT 4778 Advanced Topics in Technology (3 credits)
Current topics, or emerging research or exploration and assessment of topics in the applied engineering, industrial technology, and/or technology management fields, or any related field. Prerequisites: Junior status or consent of the instructor.

TADT 4800 Lean Six Sigma exam (0 credit)
A course designed to document a student's successful completion of the Association of Technology, Management, and Applied Engineering (ATMAE) Lean Six Sigma Certificate exam. The exam is the final requirement for the certificate. Students should pass the exam with a green belt level.

TADT 4812 Leadership Mentoring (1 credit)
Introduction to leadership principles in practice through the shadowing of a volunteer mentor currently working in a senior leadership role of a local private sector organization. The student will observe how leadership provides direction and guidance in alignment of their respective organizations toward a common goal and in support of specific performance objectives. Prerequisites: Junior status or consent of the instructor.

TADT 4820 Engineering Case Study (3 credits)
Study and development of a solution to a new or existing engineering-related problem. Students propose an appropriate case within their field of interest to be given approval by the instructor. Based on instructor approval, students submit a case study which documents the proposal, implementation strategy, and results of the proposal.

TADT 4827 Information Technology in Supply Chain (3 credits)
This course provides students with an understanding of the role of information and information technology (IT) in a supply chain. Topics covered include Supply chain visibility, Coordinated logistics applications, Inventory management systems, Bar coding / RFID, Data analytics, MRP/ERP, Cloud computing, Data security and Block chain for supply chain. Prerequisite(s): TADT 3700.

TADT 4830 Foundations in Career and Technical Education (2 credits)
A broad study of the philosophy and practice of Career and Technical Education (CTE). Emphasis is given to tracing CTE history through major legislations changes since the Smith Hughes Act of 1917 through the current requirements of Perkins V, understanding requirements of a CTE Educator under Perkins V, and analyzing demographic data for funding and local needs assessment to implement CTE philosophy and practice within communities. Prerequisites: Junior status or consent of instructor.

TADT 4837 Evaluation in Career and Technical Education (2 credits)
A study of testing and measurement techniques and applications in occupational programs. The construction of teacher-made performance test, written tests, rating scales and checklists is emphasized. Vendor and standardized are included. Prerequisites: Junior status or consent of instructor.

TADT 4839 Industrial/Career and Technical Education Student Organization (2 credits)
Acquaints students with the issues of planning and implementation of student organizations. Also includes student organizations at the secondary and post-secondary levels and their relationship to state and federal policy and legislation. Prerequisites: Junior status or consent of instructor.

TADT 4847 Methods of Teaching Career and Technical Education (2 credits)
Instructional methodology used in the implementation of occupationally and technically orientated curriculum. Prerequisites: Junior status or consent of instructor.

TADT 4849 Classroom Management in Career and Technical Education (2 credits)
A broad study of managing a Career and Technical Education classroom. Emphasis is given to; effective teaching methodologies for safe, equitable, well-managed classrooms; on and off-site laboratory safety & maintenance planning; resource management that includes, inventory, program budgeting for material and equipment purchases, and CTE strategic planning for future funding. Prerequisites: Junior status or consent of instructor.

TADT 4850 Philosophy of Career and Technical Education (2 credits)
A study of the history, philosophy, and practices of career and technical education. Includes a survey of curriculum characteristics, certification requirements, professional organizations, and career options. Prerequisites: Junior status or consent of instructor.

TADT 4858 Curriculum Development in Career and Technical Education (2 credits)
A narrow focus of curriculum development using backward course design and inquiry-based learning, furthering teacher candidates understanding of student-centered learning and the Constructivist Learning Theory (CLT). Emphasis will be given to creating a Unit of Study focused on Employability Skills, to be used in teacher candidates CTE program of study. Prerequisites: TADT 4830 & 4849, Junior status or consent of instructor.

TADT 4859 Special Needs in Career and Technical Education (2 credits)
Objectives, materials, and methods of developing and modifying curriculum in the various vocational fields for students with special needs. Prerequisites: Junior status or consent of instructor.

TADT 4860 Management In Industrial Technology Education (4 credits)
Managing the learning environment, budget, equipment and student projects in the technology education setting, Also covers safety considerations and investigates strategies for learning within the technological clusters and for accommodating special needs students. Prerequisites: Junior status or consent of instructor.

TADT 4867 Lean Principles and Practices (3 credits)
This course teaches the principles and practical application of Lean methods and tools as they would apply in various types of organizational value streams to continually reduce waste and support improvements to operational performance and value creation; organizationally inclusive for all stakeholders. Prerequisites: Junior status or consent of the instructor.

TADT 4873 Emphasis Related Capstone (3 credits)
A multifaceted project that utilizes the students culminating academic and intellectual experience to think critically, solve a challenging problem, and develop a solution using oral communication, public speaking, research skills, media literacy, teamwork, planning, self-sufficiency, or goal setting. Prerequisites: Senior status or consent of the instructor.

TADT 4875 Facilities Management (3 credits)
This course is an exploration of the concepts and organization of an integrated approach to operating, maintaining, improving and adapting the buildings and infrastructure of an organization/institution in order to create an environment that strongly supports the primary objectives of the organization. Prerequisite: Junior status or consent of instructor. Prerequisites: Junior status or consent of instructor.

TADT 4878 Quality Assurance (3 credits)
The course teaches the theory and applications of statistical analysis, quality problem solving and implementation. Prerequisites: Junior status or consent of instructor.

TADT 4879 Service Process/Improvement (3 credits)
The design and improvement of work processes in the service industries and in the service functions of manufacturing organizations. Topics include, but are not limited to, the tools and techniques required for designing, setting up, and managing service systems; improving service quality; the impacts of technology on service management; managing nonprofit service organizations; services strategies; and the positioning and marketing of services. Prerequisites: Junior status or consent of instructor.

TADT 4880 Total Quality Management (3 credits)
Total Quality Management is the latest evolutionary culmination of strategies for meeting customer expectations in terms of quality. Besides the traditional tools of quality, this course also investigates how developing an inclusive organizational culture, internal and external partner relationships, and truly understanding the needs and wants of the customer can be leveraged in today's globally competitive environment. Prerequisites: TADT 1111 or TADT 3111.

TADT 4887 Career Development Theory and Practice (2 credits)
A narrow focus of student-centered lesson planning, furthering CTE teacher candidates understanding of backward unit design. Lesson plan design has a specific focus of lifetime career development for students. Activities and assessments will provide CTE Educator with the needed career awareness and development to successfully implement in future CTE program of studies. Prerequisites: TADT 4858, Junior status or consent of the instructor.

TADT 4888 Work/Occupational Assessment of Learners (1-3 credits)
A narrow focus of Career and Technical Education licensure requirements with emphasis given to portfolio completion in CTE teacher candidates career field based on assessment of prior occupational experience, coursework, and other skills relevant to desired licensure area. Prerequisites: Junior status or consent of the instructor.

TADT 4889 Coordination Techniques of Career and Technical Education (2 credits)
The course involves the role of teacher-coordinators in the design and implementation of internships and other cooperative experimental learning methods. Prerequisites: Junior status or consent of instructor.

TADT 4893 Applied Project Management (3 credits)
This course is intended to provide the learner with the opportunity to apply project management principles and methodology to complete a real-world project in alignment with established objectives, standards, and deadlines. In addition, elements of leadership principles and practices will be applied to support team development and project success. Prerequisite(s): (TADT 1111 or TADT 3111) and TADT 3112 or consent of instructor.

TADT 4898 Simulation of Industrial Processes (3 credits)
Application of computer-based, discrete event simulation to improve or design work processes in business and industry. Emphasizes building mathematical systems models of work processes to be analyzed and optimized using simulation software such as, but not limited to, Promodel or Arena. Two hours lecture and two hours computer lab per week. Prerequisites: Junior status or consent of instructor.

TADT 4899 Design of Experiments (3 credits)
Planning, execution, and analysis of factorial-based industrial experiments. Topics include, but are not limited to, analysis of variance, fitting of regression models, two-level factorial designs, blocking strategies and confounding of variables, fractional factorial designs, response surface methods, nested and split-plot designs, three-level and mixed-level designs, and experiments with random factors. Prerequisites: Junior status or consent of instructor.

TADT 4917 DIS Tchg Assoc | (1-2 credits)
Directed Independent Study | Teaching Associate

TADT 4970 Internship (1-12 credits)
Prerequesites: Junior status or consent of instructor.

All-University Courses

The course numbers listed below, not always included in the semester class schedule, may be registered for by consent of the advisor, instructor, or department chair, or may be assigned by the department when warranted. Individual registration requires previous arrangement by the student and the completion of any required form or planning outline as well as any prerequisites.

1910, 2910, 3910, 4910 DIRECTED INDEPENDENT STUDY
1920, 2920, 3920, 4920 DIRECTED GROUP STUDY
1930, 2930, 3930, 4930 EXPERIMENTAL COURSE
1940, 2940, 3940, 4940 IN-SERVICE COURSE
1950, 2950, 3950, 4950 WORKSHOP, INSTITUTE, TOUR
1960, 2960, 3960, 4960 SPECIAL PURPOSE INSTRUCTION
1970, 2970, 3970, 4970 INTERNSHIP
1980, 2980, 3980, 4980 RESEARCH
1990, 2990, 3990, 4990 THESIS