

210 / CAMT, Industrial Technology

CAMT 250 (S) 3 hrs. cr.
Computer Assisted Manufacturing
 Advanced techniques of CNC & N/C programming using a completely integrated environment. Concepts of manufacturing programs being an integral part of a dynamic environment as compared to being in an isolated system. One hour lecture, four-hour lab per week. Prerequisites: CAMT 200 or consent of instructor.

CAMT 298 (Demand) 1-8 hrs. cr.
Topics in Manufacturing Technology
 Special topics in new or emerging manufacturing technology not normally included in another course. Prerequisites specified by the department in a course syllabus.

CAMT 310 (Demand) 4 hrs. cr.
Manufacturing Data Processing
 Designed to teach overall data processing techniques as relating to the manufacturing environment. A solid foundation of manufacturing processes and departmental structuring is required in addition to knowledge of microcomputer usage. Two hours lecture, six hours lab. Prerequisites: CAMT 100, CIS 105, CADD 115, Acct 201, or consent of instructor.

CAMT 330 (Demand) 3 hrs. cr.
Quality Control and Reliability
 The concept of quality control and its applications. The importance of quality control, tools, and techniques of SPC/SQC covering control charts used in quality control analysis, inspection and testing for quality control, process variability, product reliability, and maintainability. Two hours lecture, four hours lab. Prerequisites: CAMT 100 & 160, CIS 105, Math 310 or GB 321 or GB 405, or consent of instructor.

CAMT 490 (Demand) 1-8 hrs. cr.
Internship in Manufacturing Technology
 A structured work experience in manufacturing technology at an institution, facility, or industry not directly related to Missouri Southern. Practical application of the students' majors under the direct supervision of an on-site professional who is not an MSSU faculty or staff member. A faculty member will be responsible for approving the placement site and supervising the overall activities of the internship. Prerequisite: 15 hours of CAMT courses and permission of a committee.

CAMT 498 (Demand) 1-3 hrs. cr.
Advanced Topics in Manufacturing Technology
 Covers specialized knowledge and skills related to new developments in manufacturing technology. Topics will vary by the semester and situation. Prerequisite: Senior standing in management-technology or an associate degree in manufacturing technology.

CAMT 499 (Demand) 1-3 hrs. cr.
Independent Study in Manufacturing Technology
 Individually directed reading, research, and report preparation in selected areas of contemporary manufacturing technology, for advanced majors. Scope, depth, and area of concentration and credit will be arranged when enrolling in the course. Offered by arrangement. Prerequisite: Completion of required manufacturing technology courses with minimum 3.0 GPA and permission of instructor, department head, and school dean.

INDUSTRIAL TECHNOLOGY EDUCATION

Ummel Technology Building Room 112, 417.625.9567

Faculty Bartholet

The Industrial Technology Education degree has certifications for both middle school (grades 5-9) and secondary (grades 9-12). The middle school certification in Industrial Technology is one of two areas of concentration that a student may select from to complete their education degree. The student who desires to teach in a secondary school will have a single teaching field. Technology education is an applied discipline designed to promote technological literacy at all levels. It is the intent of such study to provide students with an understanding of their technological culture so they can become intelligent consumers of their technology. Therefore, the program is designed to produce individuals who can solve problems involving the technical means humans use for their survival. Technology education capitalizes on the needs humans have for expressing themselves with tools and materials. Technology literacy is considered a basic and fundamental study for all persons regardless of educational or career goals. As a result of these goals, the discipline is both academic and laboratory oriented.

Bachelor of Science in Education Middle School Education Grades 5-9 Certification in Industrial Technology

(This degree is 1/2 of a dual degree for Middle School Certification.)

Bachelor of Science in Education with a major in Industrial Technology Grades 5-9 Certification One of Two Teaching Fields

	Semester Hours
Core Requirements (p.32) [51*]	48*
Education Certification Requirements	51
Educ 347 Industrial Technology Methods	3
Industrial Technology Requirements:	21
Communications	6
CADD 110 Engineering Graphics (3)	
CADD 271 Graphic Information Technology (3)	
Energy & Power	3
MIMS 381 Basic Energy & Power (3)	
Materials & Process	9
CAMT 100 Introduction Machine Tool Processes (3)	
CAMT 150 Materials and Process (3)	
MIMS 391 Wood Working & Plastic (3)	
Organization and Administration	3
MIMS 350 Industrial Supervision (3)	
Second Teaching Field	25-28
TOTAL	145-148

*Required course in psychology satisfies the requirement for three hours of the Core Curriculum.

**Bachelor of Science in Education
Middle School Education**

Candidates who elect middle school (grades 5-9) as their major must complete two areas of concentration consisting of 22-32 hours in each area. The curriculum for these areas is a joint effort by the departments of teacher education and the teaching specialty. Students who desire to teach in a middle school may choose to become qualified in any two of the following seven areas: Language Arts (English), Math, Science, Social Studies, Business, Industrial Technology, or Speech/Theatre.

**Middle School Professional
Education sequence Grades 5-9**

	Semester Hours
Math 119	Math Elementary I 3
Math 120	Math Elementary II 3
Psy 305	Child/Adolescent Development 4
Psy 310	Educational Psychology 2
Psy 412	Measure & Evaluation 2
Educ 100	Introduction to Teacher Education I 1
Educ 200	Introduction to Teacher Education II. . . . 1
Educ 301	Use of Computer Software 3
Educ 302	Exceptional Child 2
Two content area Methods Courses (Educ 311, 312, 322, 336, 340, 344, 330) 4-6	
Educ 321	Microteaching 2
Educ 329	Pedagogical Theory 4
Educ 423	Classroom Management 2
Educ 342	Development Reading 3
Educ 343	Content Area Lit: MS 3
Educ 402	Foundations of Education 2
Educ 412	Philosophy, Organization & Curriculum . 2
Educ 413	Methods Teaching in Middle Grades. . . . 2
Educ 432	Critical Issues 2
Educ 452	Student Teaching 8

The Core Curriculum and Department of Education requirements for the middle school program total 100 hours. The number of hours added to this Core depends on the two content areas chosen. The possible choices and hours are listed below:

- IT/SS = 35
- IT/S-T = 50
- IT/LA = 41
- B/IT = 47
- Sci/IT = 43
- Math/IT = 43

Suggested Order of Study

**Bachelor of Science in Education Middle School
Education with Industrial Technology Concentration**

Candidates will need to check with their advisers for additional courses that must be taken in each of two chosen areas of concentration: Language Arts, Social Science, Science, Industrial Technology, Business, Speech/Theatre, or Math.

Freshman Year

1st Semester		Hours
Course		
Educ 100	Introduction to Teacher Education I	1
CORE	[Eng 101 Comp I] (WI)	3
CORE	[Math 119 Math Elem I]	3
CORE	[Econ 180 American Econ]	3
Psy 120	College Orientation	1
CORE	[Comm 100 Oral Communication] *	3
CORE	[Kine 101 PE Activity]	1
		15

2nd Semester

CORE	[Math 120 Math Elem II]	3
CORE	[Eng 102 (Eng 101)] (WI)	3
CORE	[Hist 110 U.S. 1492-1877]	3
Psy 100	General Psychology	3
CORE	[Bio 101 Gen Biology]	4
		16

Summer-Freshman Year

Concentration Area	4-8
	4-8

Sophomore Year

1st Semester		Hours
CORE	[Phys 101]	5
CORE	[Hist 120 U.S. 1877-present]	3
CORE	[Kine 103 Lifetime Wellness]	2
Educ 301	Comp Software Classroom**	3
Educ 200	Introduction to Teacher Education II	1
CORE	[Humanities/Fine Arts (2B)]	3
MIMS 381	Basic Energy & Power	3
		19

2nd Semester

Pass C-Base test for admission. Verify that ACT score is 20+. Have a 2.5 GPA in the teaching specialty area and a 2.75 cumulative GPA. Apply for admission to the Teacher Education Program. Get faculty recommendation, write autobiography, and file admission papers for tentative admission. If ACT is less than 20, candidate should retake the ACT.

Psy 305	Child/Adolescent Development	4
CORE	[Humanities/Fine Arts (2C)]	3
CORE	[Humanities/Fine Arts (2A)]	3
CAMT 100	Introduction Machine Tool Processes	3
CADD 110	Engineering Graphics	3
Concentration 2nd Area		3
		19

Summer-Sophomore Year

Concentration 2nd Area	4-8
	4-8

Junior Year

1st Semester

Candidate must be tentatively admitted to the Teacher Education Program before courses with an "Educ" prefix can be taken. (Exceptions: Educ 100, Educ 200, Educ 301 and Educ 302).

Educ 329	Ped Theory, Methods, & Practices	4
Educ 321	Microteaching	2
Educ 423	Classroom Management	2
Educ 342	Developmental Reading: Elementary	3
Concentration 2nd Area		3
MIMS 391	Wood Working & Plastics	3
		17

2nd Semester

Must be fully admitted to the Teacher Education Program

Educ 343	Content Area Lit: M.S. (WI)	3
Educ 302	Exceptional Child	2
Psy 310	Educational Psychology	2
CORE 5a	[IB 310 International Bus.]	3

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CADD 271	Graphics Information Technology	3
CAMT 150	Materials and Process	3
Concentration 2nd Area		2-3
		18-19

Summer-Junior Year		
Concentration 2nd Area		2-8
		2-8

Senior Year

1st Semester		
Educ 412	Middle School Curriculum	2
Psy 412	Measurement & Evaluation	2
Educ	2nd Certification Area	2-3
MIMS 350	Industrial Supervision	3
Concentration 2nd Area		4-5
CORE	[PSc 120 Gov't: US/St/Loc]	3
		16-18

2nd Semester		
Educ 402	Foundations of Education (WI)	2
Educ 413	Methods of Teaching Middle School	2
Educ 432	Critical Issues	2
Educ 452	Student Teaching	8
Educ 330	Industrial Technology Methods	3
		17

(Prerequisites)

[Department Recommendations]

*Candidate must have speech evaluation filed in the Education Dean's Office.

** This is a certification requirement and must be taken by all teacher education candidates prior to Junior Block or concurrently.

For additional information contact:

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 Phone: 417.625.3155
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Bachelor of Science in Education Industrial Technology Emphasis Major Code: 9040 Grades 9-12 Certification

Core Requirements (p.32) [51] 48*

Education Certification Requirements (p. 189) . . . 43-45

Industrial Technology Requirements 36

Communications: (minimum 7) 9

CADD 110 Engineering Graphics (3)

CADD 220 Architectural Drafting (3)

CADD 271 Graphic Information Technology (3)

Energy & Power: (minimum 7) 9

MIMS 381 Introduction to Power & Energy (3)

MIMS 305 Basic Electricity & Electronics (3)

MIMS 383 Power Generation Pneumatics & Hydraulics (3)

Materials & Process: (minimum 7) 9

CAMT 100 Introduction Machine Tool Processes (3)

CAMT 150 Materials and Process (3)

MIMS 391 Woodworking & Plastics (3)

Organization/Administration: (minimum 5) 6

MIMS 350 Industrial Supervision (3)

MIMS 310 Production Planning & Control (3)

Additional related: (for a total of 36) 3

MIMS 393 Wood & Plastics Science (3)

Total 127/129

* Required course in psychology satisfies the requirements for three hours of the Core Curriculum.

Suggested Order of Study

Bachelor of Science in Education Secondary Education (9-12) Industrial Technology Emphasis Major Code 9040

Freshman Year

1st Semester

Course		Hours
Educ 100	Introduction to Teacher Education I	1
Psy 100	General Psychology	3
CORE 1a	[Eng 101 Comp I] (WI)	3
CORE 1c	[Math 130 Math]	3
Psy 120	College Orientation	1
CORE 1b	[Comm 100 Oral Communication]*	3
CORE 1d	[Kine 101 PE Activity]	1
		15

2nd Semester

CADD 110	Engineering Graphics	3
CAMT 100	Introduction to Machine Tool Processes	3
CORE 1d	[Kine 103 Lifetime Wellness]	2
CORE 1a	[Eng 102 (Eng 101)] (WI)	3
CORE 4a	[Hist 110 US 1492-1877]	3
CORE 3a	[Bio 101 Gen Biology]	4
		18

Sophomore Year

1st Semester

Follow teaching specialty department recommendations for core courses and teaching specialty courses.

Educ 200	Introduction to Teacher Education II	1
Educ 302	Exceptional Child	2
CORE 3b	[Phys 100]	5
CORE 4a	[Hist 120 US 1877-present]	3
MIMS 391	Wood Working & Plastics	3
MIMS 381	Introduction to Power & Energy	3
		17

Pass first available C-Base test.

Verify that ACT score is 20. Have a 2.5 GPA in the teaching specialty area and a 2.75 cumulative GPA. Get faculty recommendation, write autobiography, and file admission papers for tentative admission.

2nd Semester

Follow teaching specialty department recommendations for core courses and teaching specialty courses.

Educ 301	Comp Software Classroom**	3
Psy 301	Adolescent Development	3
CADD 220	Architectural Drafting	3
CAMT 150	Materials and Process	3
CORE 2c	[Humanities/Fine Arts (2C)]	3
CORE 2a	[Humanities/Fine Arts (2A)]	3
		18

Junior Year

1st Semester

Candidate must be tentatively admitted to the Teacher Education Program before courses with an "Educ" prefix can be taken (Exceptions: Educ 100, Educ 200, Educ 301, and Educ 302).

Educ 329	Ped Theory, Methods, & Practices	4
Educ 321	Microteaching	2
Educ 423	Classroom Management	2
CORE 4a	[PSc 120 Gov't: US/St/Loc]	3
MIMS 350	Industrial Supervision	3
CORE 2b	[Humanities/Fine Arts (2B)]	3
		17

Follow departmental recommendations for teaching specialty courses. If recommended by Junior Block instructors and by the teacher education faculty, receive full admission to teacher education.

2nd Semester

Follow departmental recommendations for teaching specialty courses.

Psy 310	Educational Psychology	3
CADD 271	Graphics Information Technology	3
MIMS 305	Basic Electricity & Electronics	3
MIMS 393	Woods & Plastic Science	3
MIMS 383	Power Generation	
	Pneumatics And Hydraulics	3
		15

Senior Year

1st Semester

Follow the departmental recommendations for teaching specialty courses. Apply for student teaching during the second week of the semester.

Educ 422	Content Area Lit: Sec. (WI)	2
Psy 412	Measurement & Evaluation	
OR		
Educ 412	Mid School Curriculum	
OR		
Educ 420	Introduction to Counseling	2-3
MIMS 310	Production Planning & Control	3
CORE 5a	[IB 310 International Bus]	3
CORE 4a	[Econ 180 American Economic Sys]	3
		13-14

2nd Semester

Educ 402	Foundations of Education (WI)	2
Educ 432	Critical Issues	2
Educ 330	Industrial Technology Meth.	3
Educ 462	Student Teaching Sec	8
		15

(Prerequisite)

[Department Recommendations]

*Candidate must have speech evaluation filed in the Education Dean's Office.

** This is a certification requirement and must be taken by all teacher education candidates prior to Junior Block or concurrently.

For additional information contact:

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Course Descriptions

Educ 337 (S) 3 hrs. cr.

Industrial Technology Methods

This is a required education course, which is an introduction to the instructional planning, materials, philosophy, rationale, and methods of teaching Industrial Technology. It is a part of the professional semester. Prerequisites: Advanced standing in major field and admission to teacher education program. (Junior Block)



Faculty Bartholet, Duggal, Howe, Schultz

This degree program blends the management, design, and manufacturing application aspects in a unique way to produce a graduate that is functional at floor level manufacturing and management environment. Students must have completed an associate degree in a technical field in order to complete the Manufacturing Information Management Systems (MIMS) program.

Management Information Management Systems (MIMS)

	Semester Hours
Core Requirements (p. 32)	45
(6 hours core included in major)	
Associate of Science in Technical Field.	36
Required MIMS Curriculum.	45
MIMS 310 Computer Production Plan/Control	3
MIMS 350 Industrial Supervision (WI)	3
MIMS 305 Basic Electricity & Electronics	3
MIMS 420 Manufacturing Computer Applications.	3
CAMT 240 Industrial Materials	3
CIS 305 Microcomputer Applications	3
MIMS 320 Applied Statistical Quality Control	3
MIMS 450 Graphics Information Technology II.	3
MIMS 415 Mechanical Design	3
MIMS 425 Design of Experiments	3
IB 310 International Business	3
(core requirement Area 5)	
GB 321 Business Statistics I	3
GB 405 Statistical Quality Control	3
MM 350 Principles of Marketing (WI)	3
Econ 202 Principles of Economics-Micro	3
(Core requirement Area 4)	