

June 16, 2010

TO: College of Engineering Committee on Academic Affairs

FR: Robert J. Gustafson, Director, Engineering Education Innovation Center

RE: Quarter to Semester Conversion of Engineering Sciences and Technological Studies Minors

The Engineering Education Innovation Center (EEIC) is the administrative support unit for both the Engineering Sciences and Technological Studies minors. The Director of the EEIC serves as the minor coordinator and contact person for both minors.

The College of Engineering Core Curriculum and College Services (CORE) Committee acts as the equivalent of a departmental curriculum committee for these minors. It includes student representation on the committee. On May 6, 2010, the Core Committee reviewed the conversion proposal developed by the EEIC. It recommended the approval of both conversion plans by a vote of 9 Yes, 0 No, and 0 Abstaining. For both minors, it recommended to continue the deviation regarding the use of 100 level (quarter system) and 1000 level (semester system) courses.

The following two proposals deal with:

Engineering Sciences Minor

Technological Studies Minor

C: David Tomasko, Associate Dean Undergraduate Education and Student Services

Program Proposal – Engineering Sciences Minor

General Information

1. Name of the program - Engineering Sciences Minor
2. Degree title – Not a degree program
3. Academic unit(s) responsible for administrating the program – Engineering Education Innovation Center on behalf of the College of Engineering
4. Specify the type of program: Undergraduate minor
5. Semester conversion designation: Converted with minimal changes to program goals and/or curricular requirements:
 - No name change,
 - Changes in electives and/or prerequisites, only as mandated by course conversions
 - Minimal changes in overall structure of program,
 - No changes in program goals or content

This program is new as of Spring 2009. It has yet to have students complete the minor, therefore only minimal changes are proposed at this time.

Program Requirements

6. Program Learning Goals

This minor is designed for non-engineering students with an interest in learning more about technology's important role in today's society; and who may be working with engineers and technology based opportunities in the future. Specific learning goals include:

1. Develop a basic understanding of the engineering design process
 2. Understand the capabilities and limitations of technologies and engineered systems
 3. Be able to make informed decisions about engineering activities and technologies
 4. Be able to work effectively as a member of a team including technology experts
7. List the semester courses (department, title, credit hours) that constitute the requirements and other components of the program.

Key Curriculum Components

- Core - Introduction to Engineering (4 credits)

- Complementary Engineering Science (2 credit minimum)
- Computational Technology Competence (2 credit minimum)
- Technology and Society (3 credits)
- Capstone interdisciplinary teamwork experience (3-6 credits)
- Total Credits (14 credit minimum)

Department, title, and credit hours are listed for all courses options in each curriculum component in Appendix Eng. Sci. 2. Engineering Sciences Minor Advising Sheet (Proposed Semesters).

Deviation from College Policy for Minors – 1000 Level Courses

When developed, this minor received approval for deviation from the specification of the College of Engineering’s Minor Program Policy (as Revised 9 February 2005). That is “100 level courses may not count as credit toward a minor.” It was accepted that these courses have content appropriate to the objectives and audience of the minor, and that math prerequisites help assure the students have the quantitative skills needed to address the topics in a rigorous fashion. This deviation was also approved by the Colleges of the Arts and Sciences when approving the minor for students enrolled in programs of the colleges.

It is therefore requested that this deviation be continued for the semester structure of the minor and that versions of ENGINEER 1181 and 1182, semester system replacements for ENG 181 and 183, be approved for program core in the minor.

8. Current (quarters-based) and proposed (semesters-based) curriculum advising sheets

See Appendix Eng. Sci. 1. Engineering Sciences Minor Advising Sheet (Quarters) and Eng. Sci. 2. Engineering Sciences Minor Advising Sheet (Proposed Semesters).

9. Provide a curriculum map that shows how, and at what level (e.g., beginning, intermediate, advanced), the program's courses facilitate students' attainment of program learning goals.

Semester System Course (Crd Hrs)	Learning Goal(s) Addressed
Required Courses (offered by unit)	
ENGINEER 1181.01,.02 (2)	1,2 & 4 - Beginning
ENGINEER 1182.01,.02,.03 (2)	1,2 & 4 - Intermediate
ENGINEER 4081 (3-6)	1,2 & 4 - Advanced
Required Courses (offered outside the unit)	
None	
Elective Courses, Tracks, Categories, or Baskets of Courses (may be offered inside or outside of unit)	
<i>Engineering Science Options:</i>	
2 credit minimum	3 - Intermediate
AEROENG 2200 (4)	
CIVILEN 2050 (3)	

Educ: T&L 220*	
FdAg&BioENG 3810 (3)	
II&VCD 230*	
ISE 2000 (1.5)	
ISE 2400 (1.5)	
ISE 3040 (2)	
MATSCEN 2010 (3)	
Other Engineering course by permission	
<i>Computer Technologies Options</i>	
2 credit minimum	3 - Intermediate
CSE 1113 (4)	
CSE 1211 (3)	
CSE 1221 (2)	
CSE 1222 (3)	
CSE 1223 (3)	
CSE 2221 (4)	
ENGINEER 1281.01,.02,.03 (5)	
<i>Technology and Society Options</i>	
3 Credits	2- Intermediate
Compr Studies 272*	
Compr Studies 597.01*	
ENGINEER 2360.01,.02 (3)	
ENGINEER 2367 (3)	
History 362*	
Physics 367*	
Soc 302*	
General Education courses	
None	

*Semester course equivalents not yet available.

10. Provide a rationale for proposed program.

Changes to the program are minimal. The program was initially approved for students in Spring 2009. Therefore this is a new program. It is not anticipated that significant changes are needed at this time. When replacement course numbers are known for units outside of College of Engineering, they will be entered into the advising sheet. All changes will be reviewed by the College of Engineering Core Curriculum and College Services Committee as the curriculum committee for this minor.

11. Credit Hour Changes.

	A.) Number of credit hours in current program	B.) Calculated result for 2/3rds of current quarter credit hours	C.) Number of credit hours required for proposed

Program credit hour requirements:	<i>(Quarter credit hours)</i>	<i>(Multiply the value in column A by 0.667 and round to the nearest tenth of a credit hour)</i>	program <i>(Semester credit hours)</i>
Total credit hours required for completion of program	21	14	14
Prerequisite credit hours required for admission to program which are not counted toward total hours	5 (Math 117,131,or 151)	3.3	3-5 (Equivalent 1 st Calculus course)
Required credit hours offered by the unit (College of Engineering and Departments)	21-29	14-19.7	14-21
Required credit hours offered outside of the unit	0	0	0

12. Rationale for a change in credit hours if the difference is more than 4 semester credit hours between the values listed in columns B and C for any row in the table above.

Not applicable.

13. Transition Plan

Since a small number of students are currently in the minor, the Minor Program Coordinator will work directly with each person to develop an individualized transition plan. No need for any special transition courses is anticipated.

Appendix Eng. Sci. 1. Engineering Sciences Minor Advising Sheet (Quarters)

The Ohio State University
College of Engineering
Approved by the Colleges of the Arts and Sciences

Engineering Sciences Minor

College of Engineering
Engineering Education Innovation Center (EEIC)
<http://engineering.osu.edu/eeic/index.php>
244 Hitchcock Hall; 2070 Neil Ave
Columbus, OH 43210-1278; 614-247-8953
Advisor: Robert J. Gustafson

This minor is designed for non-engineering students with an interest in learning more about technology's important role in today's society; and who may be working with engineers and technology based opportunities in the future. Specific learning goals include:

- Develop a basic understanding of the engineering design process
- Understand the capabilities and limitations of technologies and engineered systems
- Be able to make informed decisions about engineering activities and technologies
- Be able to work effectively as a member of a team including technology experts

The program advisor will work with you on selection of a suitable minor program to meet your specific career objectives. Upon completion of the minor, the advisor will approve and sign the Minor Program Form. You may then file the Minor Program Form with your college or school to receive a minor in Engineering Sciences.

Key Curriculum Components

- Core - Introduction to Engineering (6-8 credits)
- Complimentary Engineering Science (3 credit minimum)
- Computational Technology Competence (4-5 credits)
- Technology and Society (4-5 credits)
- Capstone interdisciplinary teamwork experience (4-8 credits)
- Total Credits (21 credit minimum)

Note for students in the minor:

You will be expected to complete a first calculus (e.g. Math 117, 131, or 151). This course will fulfill the math requirement of all courses for the minor. Other prerequisites will depend on courses selected.

Core of the Engineering Sciences Minor is the Introduction to Engineering course sequence: ENG 181 and ENG 183 (Honors substitute permitted; H191 and H193): 6-8 hours.

ENG 181- Introduction to Engineering I

Visualization and sketches, intro to spreadsheets and CAD, working drawings, experimental design and data analysis, problem solving approaches, hands-on lab, reporting and production dissection

ENG 183- Introduction Engineering II

Team building, design/build project; project management, intro to MATLAB, written and oral presentations, preparation of visual aids, hands-on lab and reporting

Engineering Science Options: 3 Credit Hours Minimum

Aero 200, CE 410, 511, Educ: T&L 220, FABE 481, II&VCD 230, ISE 311, 406, 504, MSE 205, 281, WE 300, WE 350, Other Engineering courses by permission of the Minor Coordinator

Computation Technologies Options: 4-5 Credit Hours

CSE 200, 201, 202, 203, 204 or Higher Level CSE Class Permitted

Technology and Society Options: 5 Credit Hour

Comparative Studies 272, 597.01, ENG 360.02, 367, History 362, Physics 367, Soc 302

Capstone Experience: 4-8 Credit Hours

ENG 581- Engineering Capstone Collaboration

Students contract to collaborate with an engineering capstone design team for at least one quarter and contribute their disciplinary expertise.

General Guidelines

Required for graduation No

Credit hours required A minimum of 21

Filing the minor program form A minor program form must be filled out no later than the time the application for graduation is submitted to a college/school counselor. It will require the signature of the student and the student's major program advisor.

Changing the minor Once the minor has been filed, any changes must be approved by the Chair of the Minors Oversight Committee. This form will be available on the CoE website

Grades required No grade below a C- will be permitted in courses comprising the minor.

A minimum 2.00 cumulative point-hour ratio is required for the minor.

Course work graded Pass/Non-pass cannot count on the minor.

Transfer credit hours allowed No more than 10 hours of transfer credit may be applied to the minor.

Overlap with the GEC Permitted, unless specifically disallowed by an individual minor program.

Overlap Policy The Engineering places no restrictions on the use of a course both in a minor and major program. However, students should consult their major program for any constraints that may be applied there.

Exclusions to minor Not open to Engineering majors.

Additional Guidelines for ASC Students

Overlap between minors Each minor completed must contain 20 unique hours.

Overlap with the major Not allowed and the minor must be in a different subject than the major

Arts and Sciences Curriculum and Assessment Office <http://artsandsciences.osu.edu>
4132 Smith Lab, 174 West 18th Ave
DKH 6/1/09

Appendix Eng. Sci. 2. Engineering Sciences Minor Advising Sheet (Proposed Semesters)

The Ohio State University

College of Engineering

Approved by the Colleges of the Arts and Sciences

Engineering Sciences Minor

College of Engineering

Engineering Education Innovation Center (EEIC)

<http://engineering.osu.edu/eic/index.php>

244 Hitchcock Hall; 2070 Neil Ave

Columbus, OH 43210-1278; 614-247-8953

Advisor: Robert J. Gustafson

This minor is designed for non-engineering students with an interest in learning more about technology's important role in today's society; and who may be working with engineers and technology based opportunities in the future. Specific learning goals include:

- Develop a basic understanding of the engineering design process
- Understand the capabilities and limitations of technologies and engineered systems
- Be able to make informed decisions about engineering activities and technologies
- Be able to work effectively as a member of a team including technology experts

The program advisor will work with you on selection of a suitable minor program to meet your specific career objectives. Upon completion of the minor, the advisor will approve and sign the Minor Program Form. You may then file the Minor Program Form with your college or school to receive a minor in Engineering Sciences.

Key Curriculum Components

- Core - Introduction to Engineering (4 credits)
- Complementary Engineering Science (2 credit minimum)
- Computational Technology Competence (2credits minimum)
- Technology and Society (3 credits)
- Capstone interdisciplinary teamwork experience (3-6 credits)
- Total Credits (14 credit minimum)

Note for students in the minor:

You will be expected to complete a first calculus course (e.g., Math S117, S131, or S151). This course will fulfill the math requirement of all courses for the minor. Other prerequisites will depend on courses selected.

Core of the Engineering Sciences Minor is the Introduction to Engineering course sequence:

ENGINEER 1181.01 or .02 and ENGINEER 1182.01 or .02 or .03 (Honors substitute permitted; 1281.01 or .02 or .03H and 1282.01 or .02 or .03H): 4-8 hours.

ENGINEER 1181.xx - Fundamentals of Engineering 1

Engineering problem solving utilizing computational tools such as Excel and Matlab; hands-on experimentation; ethics; modeling; teamwork; written, oral and visual communications.

ENGINEER 1182.xx - Fundamentals of Engineering2

3-D visualization and sketching; introduction to CAD; engineering design-build; teamwork; written, oral and visual communications; and project management.

Engineering Science Options: 2 Credit Hours Minimum

AEROENG 2200, CE 2050, Educ: T&L S220, FdAg&BioENG 3810, II&VCD S230, ISE 2000, 2400,

MATSCEN 2010, Other Engineering courses by permission of the Minor Coordinator

Computation Technologies Options: 2 Credit Hours Minimum

CSE 1113, 1211, 1221, 1222, 1223, or 2221, ENGINEER 1281.01, 1281.02, or 1281.03

Technology and Society Options: 3 Credit Hour

Comparative Studies S272, S597.01, ENGINEER 2360.01, 2360.02, 2367, History S362, Physics S367, Soc S302

Capstone Experience: 3-6 Credit Hours

ENGINEER 4081- Engineering Capstone Collaboration

Students contract to collaborate with an engineering capstone design team for at least one semester and contribute their disciplinary expertise.

General Guidelines

Required for graduation No

Credit hours required A minimum of 14

Filing the minor program form A minor program form must be filled out no later than the time the application for graduation is submitted to a college/school counselor. It will require the signature of the student and the student's major program advisor.

Changing the minor Once the minor has been filed, any changes must be approved by the Chair of the Minors Oversight Committee. This form will be available on the CoE website

Grades required No grade below a C- will be permitted in courses comprising the minor.

A minimum 2.00 cumulative point-hour ratio is required for the minor.

Course work graded Pass/Non-pass cannot count on the minor.

Transfer credit hours allowed No more than 6 (will depend on ASC policy) hours of transfer credit may be applied to the minor.

Overlap with the GEC Permitted, unless specifically disallowed by an individual minor program.

Overlap Policy The College of Engineering places no restrictions on the use of a course both in a minor and major program. However, students should consult their major program for any constraints that may be applied there.

Exclusions to minor Not open to Engineering majors.

Additional Guidelines for ASC Students

Overlap between minors Each minor completed must contain 12 (will depend on ASC policy) unique hours.

Overlap with the major Not allowed and the minor must be in a different subject than the major

Program Proposal – Technological Studies Minor

General Information

1. Name of the program - Technological Studies Minor
2. Degree title – Not a degree program
3. Academic unit(s) responsible for administrating the program – Engineering Education Innovation Center on behalf of the College of Engineering
4. Specify the type of program: Undergraduate minor
5. Semester conversion designation: Converted with minimal changes to program goals and/or curricular requirements:
 - No name change,
 - Changes in electives and/or prerequisites, only as mandated by course conversions
 - Minimal changes in overall structure of program,
 - No changes in program goals or content

This program is new as of Spring 2009. It has yet to have students complete the minor, therefore only minimal changes are proposed at this time.

Program Requirements

6. Program Learning Goals

This minor has the goal of allowing students to learn about technology and to become more technologically literate persons. Specific learning goals include:

1. Better understand the role of technology (engineering) in society and the interactions of technology (engineering) with their major field
 2. Understand how to access and interpret reliable information to make informed decisions regarded technological issues
 3. Develop a basic understanding of the engineering design process
7. List the semester courses (department, title, credit hours) that constitute the requirements and other components of the program.

Key Curriculum Components

Core (6 credits)

Two options are available for the core element of the Technological Studies minor. For the first core option, two new courses are included specifically to introduce technological concepts for a non-

engineering audience. Technical and practical aspects of several technology areas will be explored. A prerequisite of any one GEC Natural Science course is required. The second core option may appeal to those who have the higher mathematics prerequisite and want a quantitatively more rigorous approach.

Option 1:

ENGINEER 2201 (3) Designing Our World: An Introduction to Engineering Design, and
ENGINEER 2202 (3) Analyzing Our World: Foundations of Engineering Analysis

Option 2:

ENGINEER 1181.01, or .02 (2) Fundamentals of Engineering 1, and
ENGINEER 1182.01, or .02, or .03 (2) Fundamentals of Engineering 2, and
ISE 3040 (2) Engineering Economic Analysis

Deviation from College Policy for Minors – 1000 Level Courses

When developed, this minor received approval for deviation from the specification of the College of Engineering’s Minor Program Policy (as Revised 9 February 2005). That is “100 level courses may not count as credit toward a minor.” It was accepted that these courses have content appropriate to the objectives and audience of the minor, and that math prerequisites help assure the students have the quantitative skills needed to address the topics in a rigorous fashion. This deviation was also approved by the Colleges of the Arts and Sciences when approving the minor for students enrolled in programs of the colleges.

It is therefore requested that this deviation be continued for the semester structure of the minor and that versions of ENGINEER 1181 and 1182, semester system replacements for ENG 181 and 183, be approved for program core in the minor.

Computational Technology (2 credits minimum)

Technology and Society (3 credits)

Capstone Seminar (1 credits)

Total Credits (12 minimum)

Department, title, and credit hours are listed for all courses options in each curriculum component in Appendix Tech. Studies 2. Technological Studies Minor Advising Sheet (Proposed Semesters).

8. Current (quarters-based) and proposed (semesters-based) curriculum advising sheets

See Appendix 1 – Tech. Studies Minor Advising Sheet (Quarters) and Appendix Tech. Studies 2. Technological Studies Minor Advising Sheet (Proposed Semesters).

9. Provide a curriculum map that shows how, and at what level (e.g., beginning, intermediate, advanced), the program's courses facilitate students' attainment of program learning goals.

Semester System Course (Crd Hrs)	Learning Goal(s) Addressed
Required Courses (offered by unit)	
Core	
Option 1	

ENGINEER 2201 (3)	
ENGINEER 2202 (3)	
Option 2	
ENGINEER 1181.01,.02 (2)	1,2 & 3 - Beginning
ENGINEER 1182.01,.02,.03 (2)	1,2 & 3 Intermediate
ISE 3040 (2)	
Both Options	
ENGINEER 4082 (1)	1,2 & 3 Advanced
Required Courses (offered outside the unit)	
None	
Elective Courses, Tracks, Categories, or Baskets of Courses (may be offered inside or outside of unit)	
<i>Computational Technology Options</i>	
2 credit minimum	2 - Intermediate
CSE 1113 (4)	
CSE 1211 (3)	
CSE 1221 (2)	
CSE 1222 (3)	
CSE 1223 (3)	
CSE 2221 (4)	
ENGINEER 1281.01H,.02H,.03H (5)	
<i>Technology and Society Options</i>	
3 Credits	1 - Intermediate
Compar Studies 272*	
Compar Studies 597.01*	
ENGINEER 2360.01	
ENGINEER 2360.02	
ENGINEER 2367	
History 362*	
Physics 367*	
Soc 302*	
General Education courses	
None	

10. Provide a rationale for proposed program changes.

Changes to the program are minimal. The program was initially approved for students in Spring 2009. Therefore this is a new program. It is not anticipated that significant changes are needed at this time. When replacement course numbers are known for units outside of College of Engineering, they will be entered into the advising sheet. All changes will be reviewed by the College of Engineering Core Curriculum and College Services Committee as the curriculum committee for this minor.

11. Credit Hour Changes.

Program credit hour requirements:	A.) Number of credit hours in current program <i>(Quarter credit hours)</i>	B.) Calculated result for 2/3rds of current quarter credit hours <i>(Multiply the value in column A by 0.667 and round to the nearest tenth of a credit hour)</i>	C.) Number of credit hours required for proposed program <i>(Semester credit hours)</i>
Total credit hours required for completion of program	20	13.3	12
Prerequisite credit hours required for admission to program which are not counted toward total hours	5 One Natural GEC Science	3.3	3
Required credit hours offered by the unit (College of Engineering and Departments)	20-22	13.3 – 14.7	12 - 14
Required credit hours offered outside of the unit	0	0	0

12. Rationale for a change in credit hours if the difference is more than 4 semester credit hours between the values listed in columns B and C for any row in the table above.

Not applicable.

13. Transition Plan

Since a small number of students are currently in the minor, the Minor Program Coordinator will work directly with each person to develop an individualized transition plan. No need for any special transition courses is anticipated.

Appendix Tech. Studies 1. Technological Studies Minor Advising Sheet (Quarters)

The Ohio State University
College of Engineering
Approved by the Colleges of the Arts and Sciences

Technological Studies Minor

College of Engineering
Engineering Education Innovation Center (EEIC)
<http://engineering.osu.edu/eeic/index.php>
244 Hitchcock Hall; 2070 Neil Ave
Columbus, OH 43210-1278; 614-247-8953
Advisor: Robert J. Gustafson

This minor has the goal of allowing students to learn about technology and to become more technologically literate persons. Specific learning goals include:

- Better understand the role of technology (engineering) in society and the interactions of technology (engineering) with their major field
- Understand how to access and interpret reliable information to make informed decisions regarded technological issues
- Develop a basic understanding of the engineering design process

Key Curriculum Components

Core (9-10 credits)

Two options are available for the core element of the Technological Studies minor. For the first core option, two new courses are included specifically to introduce technological concepts for a non-engineering audience. Technical and practical aspects of several technology areas will be explored. A prerequisite of any one GEC Natural Science course is required. The second core option may appeal to those who have the higher mathematics prerequisite and want a quantitatively more rigorous approach.

Computational Technology (4-5 credits)

Competence Facility with computational technology is needed for technology considerations, therefore the curriculum requirement in this area for both minors.

Technology and Society (5 credits)

Students also need to be able to place the technological development in a societal context as is the focus of the Technology and Society course requirement.

Capstone Seminar (2 credits)

A capstone seminar focusing on current technological topics of broad interest will complete the minor package.

Total Credits (20 minimum)

Core (9 – 10 Credit Hours)

Option 1:

ENG 201 (5) Designing Our World: An Introduction to Engineering Design, (New Course) and
ENG 202 (5) Analyzing Our World: Foundations of
Engineering Analysis (New Course)

Option 2:

ENG 181 (3) Introduction to Engineering I, and

ENG 183 (3) Introduction to Engineering II

ISE 504 (3) Engineering Economic Analysis

Computation Technologies (4-5 Credit Hours)

CSE 200, 201, 202, 203, 204 or Higher Level CSE Class Permitted

Technology and Society Options (5credit hours)

Comparative Studies 272, 597.01, ENG 360.02, 367, History 362, Physics 367, Soc 302

Capstone Seminar (2 Credit Hours)

ENG 582 Technology Issues Seminar

The program advisor will work with you in selection of a suitable minor program to meet your specific career objectives. Upon completion of the minor, the advisor will approve and sign the Minor Program Form. You may then file the Minor Program Form with your college or school to receive a minor in Technological Studies.

General Guidelines

Required for graduation No

Credit hours required A minimum of 20

Transfer credit hours allowed No more than 10 hours of transfer credit may be applied to the minor.

Overlap with the GEC Permitted, unless specifically disallowed by an individual minor program.

Grades required No grade below a C- will be permitted in courses comprising the minor.

A minimum 2:00 cumulative point-hour ratio is required for the minor.

Course work graded Pass/Non-Pass cannot count on the minor.

Filing the minor program form A minor program form must be filled out no later than the time the application for graduation is submitted. It will require the signature of the student and the student's major program advisor

Changing the minor . Once the minor has been filed, any changes must be approved by the Chair of the Minors Oversight Committee. This form will be available on the CoE website.

Overlap Policy: The Engineering places no restrictions on the use of a course both in a minor and major program. However, students should consult their major program for any constraints that may be applied there.

Exclusions to minor Not open to Engineering majors.

Additional Guidelines for ASC Students

Overlap between minors Each minor completed must contain 20 unique hours.

Overlap with the major: Not allowed and the minor must be in a different subject than the major

Appendix Tech. Studies 2. Technological Studies Minor Advising Sheet (Proposed Semesters)

The Ohio State University
College of Engineering
Approved by the Colleges of the Arts and Sciences

Technological Studies Minor

College of Engineering
Engineering Education Innovation Center (EEIC)
<http://engineering.osu.edu/eeic/index.php>
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Advisor: Robert J. Gustafson

This minor has the goal of allowing students to learn about technology and to become more technologically literate persons. Specific learning goals include:

- Better understand the role of technology (engineering) in society and the interactions of technology (engineering) with their major field
- Understand how to access and interpret reliable information to make informed decisions regarded technological issues
- Develop a basic understanding of the engineering design process

Key Curriculum Components

Core (6 credits)

Two options are available for the core element of the Technological Studies minor. For the first core option, two new courses are included specifically to introduce technological concepts for a non-engineering audience. Technical and practical aspects of several technology areas will be explored. A prerequisite of any one GEC Natural Science course is required. The second core option may appeal to those who have the higher mathematics prerequisite and want a quantitatively more rigorous approach.

Computational Technology (2 credits minimum)

Competence Facility with computational technology is needed for technology considerations, therefore the curriculum requirement in this area for both minors.

Technology and Society (3 credits)

Students also need to be able to place the technological development in a societal context as is the focus of the Technology and Society course requirement.

Capstone Seminar (1 credits)

A capstone seminar focusing on current technological topics of broad interest will complete the minor package.

Total Credits (12 minimum)

Core (6 Credit Hours)

Option 1:

ENG 2201 (3) Designing Our World: An Introduction to Engineering Design, and
ENG 2202 (3) Analyzing Our World: Foundations of Engineering Analysis

Option 2:

ENG 1181 (2) Fundamentals of Engineering 1, and
ENG 1183 (2) Fundamentals of Engineering 2

ISE 3040 (3) Engineering Economic

Computation Technologies (2 Credit Hours Minimum)

CSE 1113, 1211, 1221, 1222, 1223, or 2221

Technology and Society Options (3Credit Hours)

Comparative Studies S272, S597.01, ENGINEER 2360.01,.02, 2367, History S362, Physics S367, Soc S302

Capstone Seminar (1 Credit Hours)

ENG 4082 Technology Issues Seminar

The program advisor will work with you in selection of a suitable minor program to meet your specific career objectives. Upon completion of the minor, the advisor will approve and sign the Minor Program Form. You may then file the Minor Program Form with your college or school to receive a minor in Technological Studies.

General Guidelines

Required for graduation No

Credit hours required A minimum of 12

Filing the minor program form A minor program form must be filled out no later than the time the application for graduation is submitted. It will require the signature of the student and the student's major program advisor

Changing the minor Once the minor has been filed, any changes must be approved by the Chair of the Minors Oversight Committee. This form will be available on the CoE website.

Transfer credit hours allowed No more than 6 (will depend on ASC policy) hours of transfer credit may be applied to the minor.

Grades required No grade below a C- will be permitted in courses comprising the minor.

A minimum 2:00 cumulative point-hour ratio is required for the minor.

Course work graded Pass/Non-Pass cannot count on the minor.

Overlap with the GEC Permitted, unless specifically disallowed by an individual minor program.

Overlap Policy The College of Engineering places no restrictions on the use of a course both in a minor and major program. However, students should consult their major program for any constraints that may be applied there.

Exclusions to minor Not open to Engineering majors.

Additional Guidelines for ASC Students

Overlap between minors Each minor completed must contain 12 (will depend on future ASC policy) unique hours.

Overlap with the major Not allowed and the minor must be in a different subject than the major