

From: [Marilyn Blackwell](mailto:Marilyn.Blackwell)
To: [Soave, Melissa](mailto:Soave.Melissa); [Smith, Randy](mailto:Smith.Randy); cogdell.1@osu.edu
Subject: Fwd: RE: MS in Welding Engineering
Date: Thursday, December 30, 2010 2:24:12 PM
Attachments: [BSWE Program Proposal 2010-12-20.pdf](#)

>Original-recipient: rfc822:blackwell.4@osu.edu
>X-Authentication-warning: defang20.it.ohio-state.edu: defang set sender to
> <benatar.1@osu.edu> using -f
>From: Avi Benatar <benatar.1@osu.edu>
>To: 'Marilyn Blackwell' <blackwell.4@osu.edu>
>Cc: breitenberger.1@osu.edu
>Subject: RE: MS in Welding Engineering
>Date: Mon, 20 Dec 2010 11:01:08 -0500
>X-Mailer: Microsoft Outlook 14.0
>Thread-index: AQEYCU2PpWXoGiL+DztoCX9ADznpIpUQp/+A
>X-Bayes-Prob: 0.0001 (Score 0, tokens from: dysart.1, 20_low)
>X-Spam-Score: -2000.00 () [Tag at 4.50] SPF(pass,-2000)
>X-CanIt-Geo: ip=128.146.216.78; country=US; region=OH; city=Columbus;
> latitude=39.9968; longitude=-82.9882; metrocode=535; areacode=614;
> <http://maps.google.com/maps?q=39.9968,-82.9882&z=6>
>X-CanItPRO-Stream: 20_low (inherits from default)
>X-Canit-Stats-ID: 1130584029 - 28afd32a16f9 (trained as not-spam)
>X-Scanned-By: CanIt (www . roaringpenguin . com) on 128.146.216.134

>Dear Marilyn,

>Thanks very much for your kind words, and for giving us the opportunity to
>correct the proposal. Please find attached the proposal with the correctly
>spelled department name.

>Best regards,

>Avi

>-----Original Message-----

>From: Marilyn Blackwell [<mailto:blackwell.4@osu.edu>]
>Sent: Saturday, December 18, 2010 11:28 AM
>To: benatar.1@osu.edu
>Cc: breitenberger.1@osu.edu
>Subject: MS in Welding Engineering

>Dear Dr. Benatar:

>Allow me to introduce myself. My name is Marilyn Blackwell and I'm chair of
>Subcommittee B of the Council on Academic Affairs. Our subcommittee is
>charged with reviewing all the semester conversion proposals from the
>College of Engineering and thus your proposal for the BS in Welding
>Engineering has arrived in our hands.

>I am delighted to tell you that your proposal is far and away one of the
>clearest and most complete proposals we have read, that we have no questions
>at all, and that we have only one suggestion:

>We think that you probably do want to spell the name of your degree-granting
>department correctly. On three instances it is spelled "Material Science

>and Engineering." instead of "Materials Science and Engineering." These
>instances occur on page 1 under number 3; on page 3 the last line under the
>chart; and on page 4, paragraph 1, line.3.

>

>If you could get me a corrected electronic copy yet this month, we can get
>it approved by the Subcommittee as a whole and forward it on to CAA for its
>approval at it first meeting of the new year.

>

>Best,

>

>Marilyn Blackwell

>

>Marilyn Blackwell

>Vorman Anderson-Professor of Scandinavian Studies

>498 Hagerty Hall

>1775 College Road

>Ohio State University

>Columbus OH 43210

>(614) 292-8687

>blackwell.4@osu.edu

>

Marilyn Johns Blackwell

Vorman-Anderson Professor of Scandinavian Languages and Literatures

Department of Germanic Languages and Literatures

498 Hagerty Hall

1775 College Road

Ohio State University

Columbus OH 43210

e-mail: blackwell.4@osu.edu

phone: (614) 292-8687



College of Engineering

122 Hitchcock Hall
2070 Neil Avenue
Columbus, OH 43210-1278
Phone 614-292-2651
FAX 614-292-9379
E-mail engosu@osu.edu

Date: 12 August 2010

To: Randy Smith
Vice Provost, Office of Academic Affairs

From: Ed McCaul 
Secretary College of Engineering Committee on Academy Affairs (CCAA)

Subject: Semester Conversion Proposal for BS in Welding Engineering

Attached is a letter from Rudolph Buchheit, Department Chair of Materials Science and Engineering, as well as a semester conversion proposal for the BS in Welding Engineering Degree.

This proposal was reviewed by a subcommittee of CCAA. After reviewing the proposal and having some changes made to it the subcommittee recommended to the full committee that it be approved. After a discussion, CCAA unanimously approved the proposal on the 11th of August 2010 and requested that I forward the proposal to you for consideration by CAA. If you have any questions concerning this proposal please let me know.



Department of Materials Science and Engineering

Rudolph G. Buchheit
Professor and Chair
177 Watts Hall
2041 College Rd.
Columbus, OH 43210
phone: 614-292-6085
fax: 614-292-9857

To: Office of Academic Affairs

From: Rudolph G. Buchheit, MSE Department Chair

A handwritten signature in blue ink that reads "R.G. Buchheit".

Date: June 28, 2010

Re: Semester Program Proposal for ***BS in Welding Engineering***

The faculty of the Welding Engineering program have worked diligently over the past year to develop the attached curriculum revision proposal for the semesters academic calendar. The Welding Engineering faculty has voted unanimously, with five in favor, zero against and zero abstain, to approve this proposal as our plan for the ***BS in Welding Engineering***, and the Materials Science and Engineering faculty has given its assent as well. In view of these affirmations, I recommend approval of the proposal.

Welding Engineering Program Proposal

GENERAL PROGRAM INFORMATION

1. Identify the name of the program (current and proposed names, if different)

Welding Engineering (WE)

2. Identify the degree title (current and proposed names, if different).

Bachelor of Science in Welding Engineering (BSWE)

3. Identify the academic unit(s) responsible for administrating the program

Dept. of Materials Science and Engineering

4. Specify the type of program:

- a. Undergraduate bachelors degree program or major

5. Select the appropriate semester conversion designation (*Note: To aid in the approval process, please self-select which of the following seems more applicable based on your own understanding of what was done*):

- b. Converted with minimal changes to program goals and/or curricular requirements (e.g., name changes, changes in electives and/or prerequisites, minimal changes in overall structure of program, minimal or no changes in program goals or content)

PROGRAM REQUIREMENTS

6. List program learning goals

The BSWE is an ABET, Inc. Accredited Engineering program and therefore their terminology will be followed by providing Program Objectives and Program Outcomes.

BSWE Program Educational Objectives

- Welding engineers will be able to utilize the fundamental principles of engineering science and mathematics, and are aware of the underlying historic, social, ethical and aesthetic aspects of engineering.
- Welding engineers will have knowledge of the fundamental theory of the process, design, materials and testing aspects of welding.
- Welding engineers will be able to apply their fundamental welding engineering knowledge in an integrated fashion to solve diverse practical problems in the welding and joining field.
- Welding engineers will be able to communicate effectively in written, oral, and informal forms with a variety of audiences.

- Welding engineers will be able to work effectively in independent and collaborative aspects of their professional activity in an organized and productive fashion.

BSWE Program Educational Outcomes

- a. An ability to apply knowledge of mathematics, science, and engineering.
- b. An ability to design and conduct experiments, as well as to analyze and interpret data.
- c. An ability to design a system, component, or process to meet desired needs.
- d. An ability to function on multi-disciplinary teams.
- e. An ability to identify, formulate, and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i. A recognition of the need for, and an ability to engage in life-long learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- l. an ability to select and design welding materials, processes and inspection techniques based on application, fabrication and service conditions
- m. an ability to develop welding procedures that specify materials, processes and inspection requirements
- n. an ability to design welded structures and components to meet application requirements

7. List the semester courses (department, title, credit hours) that constitute the requirements and other components of the program.

See Attachment 1 with the proposed BSWE program requirements

8. Append a current (quarters-based) and proposed (semesters-based) curriculum advising sheet for the program, formatted to meet the unit's standards.

See Attachment 2 for current quarters-based curriculum advising sheet and Attachment 3 for proposed semesters-based curriculum advising sheet.

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. A table format is recommended (*see example below*).

See Attachment 4

10. Provide a rationale for proposed program changes (either significant or minimal) and a description of how the changes will benefit students and enhance program quality. Include date of last significant program revision. [Word limit: 750]

There are minimal changes proposed to the educational requirements for the WE BS program for the Q2S transition. As part of the ABET accreditation process the program has been

subjected to annual assessments and continuous improvements. In 2006, as part of a WE strategic planning activity, an external committee (Transition Planning Committee) commissioned by then Dean W. A. "Bud" Baeslack and chaired by Dr. Karl Graff, reviewed the BS program. This committee found that the educational requirements of the BS program were sound and that the program was of high quality.

To plan for the Q2S transition and to assess the BS program needs, the WE faculty began meeting in Wi09. During these discussions, WE faculty reviewed data from our most recent ABET accreditation, input from the WE and Department advisory boards over the past decade, the WE strategic plan, the Transition Planning Committee report, and student input. In Au05, the WE program received a strong evaluation by ABET, Inc. with accreditation for the maximum period of six years until the next review. The July 2007 Transition Planning Committee report highlighted the high quality and uniqueness of the BSWE educational program. The other assessments also consistently showed that the BSWE educational program is strong and well designed with continuous improvements implemented over the years. For example, the WE Advisory Board recommended adding more material on codes and standards resulting in the development and addition of a course on Welding Codes to the design sequence. The student feedback was also very positive with the recommendation to add more laboratories, and in the proposed semester curriculum we expand the number and scope of the welding processes and welding metallurgy labs. Therefore, based on these strong evaluations and assessments, it was determined that it would be best to transition from quarters to semesters with minimal changes.

11. Provide a table to aid the Council on Academic Affairs reviewers as they check for credit hour changes. The table should include the following information:

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	193	128.7	129
Prerequisite credit hours required for admission to program which are not counted toward total hours	0	0	0
Required credit hours offered by the unit*	77	51.4	56
Required credit hours offered outside of the unit	116	77.4	73

*Includes courses in Welding Engineering and Materials Science and Engineering

12. Provide a 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. [Word limit: 500]

The required credit hours offered by the unit increased 4.6 semester credit hours in the semester system compared with the quarter system because additional hours were added to the WE capstone course sequence and to the Materials Science and Engineering (MSE) courses that our students take. The credit hours for the WE capstone courses was increased to better represent the student effort in these courses. The MSE courses that our students take have a slight increase in credit hours in the semester system to account for an increase in content that provides them with stronger fundamentals in MSE.

TRANSITION POLICY

13. Include a policy statement from the chair of the department / unit that assures those students who began their degree under quarters that the transition to semesters will not delay their graduation nor disrupt progress toward a degree. This may include a description of how individual transition advising plans will be developed and possible use of bridge courses. It should address students in the program and students taking service courses offered by the department / unit.

No WE major who began the degree program under quarters will have progress toward graduation impeded by the transition to semesters. Graduation requirements beginning Summer 2012 will be those in force for WE majors under semesters; but every quarter-credit-hour that would have counted toward the WE major under the quarter-based WE program will count (as 2/3 of a semester-credit-hour) toward the requirements for graduation under the semester-based WE program. Additional advising support will be provided for WE majors to assist in planning course schedules for the last year of quarters (2011-2012) and for at least the first year of semesters (2012-2013). If it is determined that the “normal” conditions covered by the generic WE major transition worksheet would result in a particular student facing an unavoidable delay in graduation compared to quarters, due to circumstances related to the change to semesters rather than the student’s failure to make satisfactory progress through the program, then a revision of specific requirements will be worked out for that student by the advising staff with approval by the WE Undergraduate Studies Committee.

Rudolph G. Buchheit
MSE Department Chairman

According to the BSWE degree conversion policy, a student who met a requirement in the quarter system will be deemed to meet the corresponding requirement in the semester system. Therefore, courses that were taken in the quarter system would satisfy the requirement for the corresponding course in the semester system. For example, students that take ISE350 in the quarter system will satisfy the requirement of having completed ISE4500, which is the corresponding course in the semester system.

For the course sequences in Mathematics and Physics, we will rely on the transition plans that are being developed by those departments. For course sequences in welding engineering, we only have the welding metallurgy course sequence (WE4101 and WE4102) and associated labs (WE4611 and WE4612) that spans from the junior to senior year. Therefore, in Spring Quarter 2012, we will add a group studies course that will provide Juniors with the content needed to be prepared to take WE4612 in the Autumn Semester of 2012. This will accommodate all but the few students (typically 3-5 students per year) that are out-of-sequence. For the few students that are out-of-sequence, we will use the distance versions of our undergraduate courses (all these courses are also offered through distance learning) to help them get back in sequence. These out-of-sequence students will register for independent study with the faculty members that are teaching courses that they will be taking out-of-sequence. The faculty member will provide them access to the online lectures, assignments, quizzes and exams for the content that they missed while also monitoring their progress and grading their performance. It is expected that most of these out-of-sequence students will be able to complete the independent study during the May or Summer term. For courses with laboratories, the few laboratories that were missed by these students will be made up either during the independent study or during the first two weeks of the next semester in the course sequence. If needed, revision of specific requirements will be worked for individual out-of-sequence students by the advising staff with approval by the WE Undergraduate Studies Committee.

ASSESSMENT CONVERSION

- 14. Summarize how the program's current quarter-based assessment practices will be modified, if necessary, to fit the semester calendar [Word limit: 150].** *(Note: For example, if there are embedded assessments in selected courses, a modified assessment plan may identify the new semester courses which will include testing student attainment of program goals.)* **All undergraduate degrees and majors should have an assessment plan on file with the Office of Academic Affairs; preliminary assessment planning (item #15.b. i through iii) is encouraged for all other programs.**

The WE Program has an existing assessment plan in place that is part of our ABET, Inc. accreditation requirements. In Au05, the WE program received a strong evaluation along with endorsement of our assessment plan and continuous improvement approach by ABET, Inc. with accreditation for the maximum period of six years. Therefore, we will continue using this assessment plan, which will not be impacted by the change to semesters.

- 15. Indicate, for an undergraduate degree program or major proposal, whether the program has a plan on file with the Office of Academic Affairs (Yes / No). If no, please select and complete one of the following two options:**

WE filled out the on-line assessment plan and submitted it to our curricular Dean for final submission to OAA.

Attachment 1 – BSWE Proposed Program Requirements

General Education	Course Number	Cr-hrs
Writing Level 1		3
Writing Level 2		3
Literature		3
Arts		3
Historical Study		3
Social Science 1		3
Social Science 2		3
Culture and Ideas: Ethics		3
	Total	24

Engineering Core	Course Number	Cr-hrs
Engineering Survey	Eng _____	1
Intro. to Engineering 1	Eng 1181	2
Intro. to Engineering 2	Eng 1182	2
Engineering Calculus 1	Math _____	5
Engineering Calculus 2	Math _____	5
Physics 1	Phys 1131	5
	Total	20

Required Courses	Course Number	Cr-hrs
Differential Equations	Math _____	4
Physics 2	Phys 1132	5
Chemistry for Engineers	Chem _____	4
Statistical Methods for Engineers	Stat 4525	2
Introduction to Material Science	MSE2010	3
Introduction to Electric Circuits	ECE _____	3
Statics & Intro Strength of Materials	ME2040	4
Thermodynamics	MSE2251	3
Matlab Programming and Simulation	CSE _____	2
Survey Welding Engineering	WE 3001	3
Introductory Arc Welding Lab	WE 3010	1
Structure and Transf. of Materials	MSE _____	3
Materials and Processing Lab	MSE _____	2
Physical Principles of Weld Proc. 1	WE4001	4
Eng. Analysis for Design and Simulation	WE4201	4
Fundamentals of Manf. Eng.	ISE4500	3
Physical Principles of Weld Proc. 2	WE4002	4
Welding Metallurgy 1	WE4101	3
Welding Metallurgy Lab 1	WE4611	1
Nondestructive Evaluation	WE4301	3
Welding Design	WE4202	3
Welding Metallurgy 2	WE4102	3
Welding Metallurgy Lab 2	WE4612	1
Capstone Welding 1	WE4901	2
Industrial Experience	WE3981	1
Engineering Economics	ISE _____	2
Capstone Welding 2	WE4902	3
Technical Electives (3 or 4 courses)*	WE _____ or MSE _____	9
	Total	85

Grand Total	129
-------------	-----

* Technical elective will be made up of 2 and 3 credit hour (cr-hr) semester courses. Therefore, a student could take three 3cr-hr courses, three 2 cr-hr and one 3 cr-hr courses, or other combinations to meet this requirement.

**Welding Engineering
2009-2010**

Attachment 2 – Quarter Advising Report

Name: _____ Student ID: _____ Phone: _____

New to OSU: _____ email: _____@osu.edu

YEAR	AUTUMN	WINTER	SPRING
1	Math 151.OX (Calc & Anal Geom) . 5 _____ Chem 121(Gen Chem)..... 5 _____ Engr 100.13(Engr Survey) 1 _____ Engr 181.01 (Intro to Engr I)..... 3 _____	Math 152.OX (Calc & Anal Geom).. 5 _____ Physics 131 (Partcls & Motion) 5 _____ Engr 183.OX (Intro to Engr II) 3 _____ Chem 125 (Chem for Engr) 4 _____	Math 153.OX (Calc & Anal Geom)5 _____ Physics 132 (Electrcy & Magntsm)....5 _____ En Graph 167(Prob Slv Prog Engr)....4 _____ English 110.OX (1 st Yr English Comp).5 _____
2	Math 254.OX (Calc & Anal Geom) . 5 _____ Physics 133 (Electrdynmc & Quant) . 5 _____ WE 300 (Survey of WE)..... 3 _____ WE 350 (Intro Weld Lab)..... 1 _____ GEC.....5 _____	Math 255.OX (Diff Equat)..... 5 _____ EE 300 (Electrical Circuits)..... 3 _____ EE 309 (Electrical Circuits Lab)..... 1 _____ ME 410 (Statics) 4 _____ WE 351 (Intro Weld Lab II)..... 1 _____ GEC.....5 _____	ME 420 (Intro Strngth Mtlis).....4 _____ ISE 350 (Manufacturing Engr).....3 _____ MSE 205 (Intro to MSE).....3 _____ GEC.....5 _____ GEC.....5 _____
3	WE 500 (Physical Prin in WE) 3 _____ WE 550 (Physical Prin in WE Lab I) . 1 _____ WE 620 (Engr Anlys Dsgn & Simulat) 4 _____ MSE 401 (Mtlis Thrmodynms) 4 _____	WE 600 (Physical Prin in WE II) 3 _____ WE 621 (WE Design)..... 4 _____ MSE 525 (Phase Diagrams)..... 3 _____ MSE 581.04 (MS Lab)2 _____	WE 601 (Weld Process & Apps).....3 _____ WE 610 (Intro to Weld Metallurgy).....3 _____ WE 631 (Nondestructive Eval).....4 _____ WE 641 (Weld. Codes & Stds) 3 _____ WE 651 (Weld Proc Apps – Lab).....1 _____ MSE 543 (Struct Transform).....3 _____
4	WE 489 (Industrial Experience) 1 _____ WE 611 (Weld Metallurgy I) 3 _____ WE 661 (Weld Metallurgy I Lab) 1 _____ WE 690 (Capstone Weld Dsgn I)..... 1 _____ ISE 410 (Indstrial Quality Control)....4 _____ Technical Electives	WE 612 (Weld Metallurgy II) 3 _____ WE 691 (Capstone Weld Dsgn II) 2 _____ WE 662 (Anys Non-Ferrous Hi All Weld) ..1 _____ ISE 504 (Eng Econ Analy).....3 _____ GEC.....5 _____ Technical Electives	WE 692 (Capstone Weld Dsgn III).....2 _____ GEC.....5 _____ Technical Electives

Courses Printed in BOLD are taught only one time per year.

Please check On-line Course Offerings for availability of other courses.

GENERAL EDUCATION (35 hrs)
English & Communication Skills (10)
English 110.OX (5)
2nd Writing Course (5)

Students must take 25 hours across Social Sciences, Historical Study, and Arts & Humanities with a minimum of 5 hours and maximum of 10 hours per category.

Historical Study (5-10)
_____() _____
_____() _____

Arts & Humanities (5-10)
_____() _____
_____() _____

Social Sciences (5-10)
_____() _____
_____() _____

Ethics (5)
(May overlap with another GEC Category)
_____() _____

Social Diversity
(May overlap with another GEC Category)
_____() _____

TECHNICAL ELECTIVES (14 hrs)
_____() _____
_____() _____
_____() _____
_____() _____
_____() _____
_____() _____
_____() _____

ADMISSION CONDITION
_____() _____
_____() _____

Sub-total Core144
General Education35
Technical Electives14

TOTAL HOURS193

Acceptance into the Welding Engineering major is limited to 66 students per year and will depend on the cumulative point-hour ratio (CPHR) and the secondary point-hour ratio (SPHR) upon completion of the following pre-major courses: *Math 151.OX, 152.OX, 153.OX; Physics 131, 132; English 110.OX; Engineering 181.01, 183.OX; En Graph 167; Chemistry 121 & 125* (or approved substitutes). A minimum SPHR of 2.0 is required. Formal application is required by April 10 of the year preceding taking WE 500 & 550. See the departmental office (WA 477) for details.

**Welding Engineering
20XX-20XX**

Attachment 3 – Proposed Semester Advising Report

Name: _____ Student ID: _____ Phone: _____

New to OSU: _____ email: _____@osu.edu

YEAR	AUTUMN	SPRING
1	Math Engineering Calculus I 5 Chem Chemistry for Engineers 4 Phys 1131 Physics I 5 Engr 1181 Introduction to Engineering I 2 Engr Engineering Survey 1 <p style="text-align: right;">Total 17</p>	Math Engineering Calculus II 5 Phys 1132 Physics II 5 Engr 1182 Introduction to Engineering II 2 Stat 4252 Statistical Methods for Engineers 2 Gen Ed Writing Level I 3 <p style="text-align: right;">Total 17</p>
2	Math Differential Equations 4 MSE 2010 Introduction to MSE 3 ECE Introduction to ECE 3 Gen Ed Writing Level II 3 Gen Ed Social Science I 3 <p style="text-align: right;">Total 16</p>	ME 2040 Statics and Strength of Materials 4 MSE 2251 Thermodynamics 3 CSE Matlab Programming & Simulation 2 WE 3001 Survey Welding Engineering 3 WE 3010 Introductory Arc Welding Lab 1 Gen Ed Culture & Ideas: Ethics 3 <p style="text-align: right;">Total 16</p>
3	MSE Struct. and Transf. of Matls 3 MSE Material and Processing Lab 2 WE 4001 Phys. Princip. Weld Proc (w/Lab) I 4 WE 4201 Eng. Anal. Design & Sim. (w/Lab) 4 Gen Ed Historical Study 3 <p style="text-align: right;">Total 16</p>	ISE 4500 Fund. of Manufacturing Eng 3 WE 4002 Phys. Princip. Weld Proc (w/Lab) II 4 WE 4202 Welding Design 3 WE 4101 Welding Metallurgy I 3 WE 4611 Welding Metallurgy Lab I 1 WE 4301 Nondestructive Evaluation (w/Lab) 3 <p style="text-align: right;">Total 17</p>
4	WE 4102 Welding Metallurgy II 3 WE 4612 Welding Metallurgy Lab II 1 WE 4901 Capstone Welding Design I 2 WE 3981 Industrial Experience 1 ISE Engineering Economics 2 Tech Elec 2 Gen Ed Literature 3 <p style="text-align: right;">Total 14</p>	WE 4902 Capstone Welding Design II 3 Tech Elec 2 Tech Elec 2 Tech Elec 3 Gen Ed Arts 3 Gen Ed Social Sciences 2 3 <p style="text-align: right;">Total 16</p>

GENERAL EDUCATION (24 hrs)
 English & Communication Skills (6)
English 110.0X (3)
2nd Writing Course (3)

Students must take 25 hours across Social Sciences, Historical Study, and Arts & Humanities with a minimum of 5 hours and maximum of 10 hours per category.

Historical Study (3)
 _____ () _____

Arts & Humanities (3)
 _____ () _____

Social Sciences (6)
 _____ () _____
 _____ () _____

Ethics (3)
 (May overlap with another GEC Category)
 _____ () _____

Social Diversity
 (May overlap with another GEC Category)
 _____ () _____

TECHNICAL ELECTIVES (9 hrs)
 _____ () _____
 _____ () _____
 _____ () _____
 _____ () _____
 _____ () _____

ADMISSION CONDITION
 _____ () _____
 _____ () _____

Sub-total Core96
 General Education24
 Technical Electives9

TOTAL HOURS129

Acceptance into the Welding Engineering major is limited to 66 students per year and will depend on the cumulative point-hour ratio (CPHR) and the secondary point-hour ratio (SPHR) upon completion of the following pre-major courses: *Engineering Calculus I, II; Physics 1131, 1132; English Writing Level I; Engineering 1181, 1182; Chemistry for Engineers* (or approved substitutes). A minimum SPHR of 2.0 is required. Formal application is required by April 10 of the year preceding taking WE4001. See the departmental office (WA 477) for details.

Attachment 4 – BSWE Proposed Curriculum Map: Courses to Program Outcomes

Course Number	a	b	c	d	e	f	g	h	i	j	k	l	m	n
WELDENG 3001	**	*		*	*	*	*				*	***	*	*
WELDENG 3010	*										*		*	
WELDENG 3981							*		*		*	*	*	*
WELDENG 4001	***	***	***		***						**	***	***	
WELDENG 4002	***	***	*	*	***						**	***	***	
WELDENG 4101	*	*	*		*			*			*	***	**	*
WELDENG 4102	*		*		*			*			*	***	*	*
WELDENG 4201	***	*	*		***	*	*	*	**	*	***	***	*	**
WELDENG 4202	***	**	**	*	***	**	*	*	**	**	***	***	**	***
WELDENG 4301	***	*	*		***	*	*	**	*	*	***	***	**	*
WELDENG 4611	*	***	*	*	*	*	*	*			*	***	**	*
WELDENG 4612	*	*		***	*		***				**	***		
WELDENG 4901	***	***	**	***	***	***	***	**	*	**	***	***	**	**
WELDENG 4902	***	***	**	***	***	***	***	**	*	**	***	***	**	**