DEGREE/PROGRAM CHANGE
FORM C
Form Number: C1508

Fields marked with * are required

Name of Initiator: Mark Daniel Russell **Email:** russ1307@unm.edu **Phone Number:** 505 277-1948
Date: 10-24-2014

Associated Forms exist? Yes Initiator's Title Lecturer II: Civil Engineering Civil Engr

Faculty Contact Mark Russell Administrative Contact Nicole Bingham
Department Civil Engineering Admin Email nicluna@unm.edu
Branch Admin Phone 277-6633

Proposed effective term
Semester Fall Year 2015

Course Information

Select Appropriate Program Undergraduate Degree Program
Name of New or Existing Program BS Civil Engineering
Select Category Major Degree Type BS
Select Action Revision

Exact Title and Requirements as they should appear in the catalog. If there is a change, upload current and proposed requirements.
See current catalog for format within the respective college (upload a doc/pdf file)

Civil Engineering Curriculum proposal 5 Dec 14.docx

☐ **Does this change affect other departmental program/branch campuses? If yes, indicate below.**

Reason(s) for Request (enter text below or upload a doc/pdf file)
To improve course offering efficiency.

Civil Engineering Curriculum justification 23 Oct 14.docx

Upload a document that inlcudes justification for the program, impact on long-range planning, detailed budget analysis and faculty workload implications.(upload a doc/pdf file)

Workload for Civil Engineering 23 Oct 14.docx

☐ **Are you proposing a new undergraduate degree or new undergraduate certificate? If yes, upload the following documents.**

Upload a two-page Executive Summary authorized by Associate Provost. (upload a doc/pdf file)

Upload memo from Associate Provost authorizing go-ahead to full proposal. (upload a doc/pdf file)

December 5, 2014

Proposal for change to Civil Engineering undergraduate curriculum

Current text in Course Catalog:

Bachelor of Science in Civil Engineering

The Bachelor of Science in Civil Engineering (B.S.C.E.) program is accredited by the Engineering Accreditation Commission of ABET. The **Educational Objectives** of the Civil Engineering program are:

1. Prepare our graduates for successful professional practice or advanced study in civil engineering.
2. Provide our graduates with a broad education as a foundation for professional licensure and life-long learning.
3. Produce graduates with an appreciation for social, economic and ethical issues related to civil engineering.

Curriculum

Credit hours required for graduation: 129

First Year	First Semester	Credit Hours
ENGL 110 (*or* ENGL 112; *or* ENGL 113)	Accelerated Composition (*or* Composition II; *or* Enhanced Composition) [(1)]	3
MATH 162	Calculus I [(1)]	4
CHEM 121	General Chemistry [(1)]	3
CHEM 123L	General Chemistry Lab [(1)]	1
CE 160L	Civil Engineering Design	3
	Core Humanities Elective	3
		17

	Second Semester	
ENGL 120	Composition III [(1)]	3
MATH 163	Calculus II	4
BIOL 110 *-or-* EPS 101	Biology Non-Majors How the Earth Works-An Introduction to Geology	3
CS 151L	Computer Programming Fundamentals for Non-Majors Lab	3
PHYC 160	General Physics [(1)]	3
PHYC 167	Problems in General Physics	1
		17
Second Year	**First Semester**	
MATH 264	Calculus III	4
PHYC 161	General Physics	3
CE 202	Engineering Statics	3
CE 283	Surveying and Geomatics	3

ECON 105 *-or-* ECON 106	Introductory Macroeconomics [(1)] Introductory Microeconomics [(1)]	3
		16
	Second Semester	
MATH 316	Applied Ordinary Differential Equations	3
ECE 203 *-or-* ME 301	Circuit Analysis I Thermodynamics	3
ME 306	Dynamics	3
STAT 345	Elements of Mathematical Statistics and Probability Theory	3
ENGL 219	Technical and Professional Writing [(1)]	3
		15
Third Year	**First Semester**	
CE 302	Mechanics of Materials	3
CE 305	Infrastructure Materials Science	4
CE 331	Fluid Mechanics	4
CE 372	Principles of Construction	3

CE 382	Transportation Engineering	3
		17
	Second Semester	
CE 308	Structural Analysis	3
CE 335	Environmental and Water Resources Engineering	3
CE 350	Engineering Economy	3
CE 360	Soil Mechanics	3
	Core Fine Arts Elective [1]	4
		16
Fourth Year [2]	**First Semester**	
	Breadth Requirement Elective [3] [5]	3
	Breadth Requirement Elective [3] [5]	3
	Breadth Requirement Elective [3] [5]	3
	Core Second Language Elective [1]	3

	Core Humanities Elective [1]	3
		15
	Second Semester	
CE 409	Engineering Ethics	1
CE 499L	Design of Civil Engineering Systems	3
	Breadth Requirement Elective [3] [5]	3
	Depth Requirement Elective [4] [5]	3
	Depth Requirement Elective [4] [5]	3
	Core Social and Behavioral Sciences Elective [1]	3
		16

Notes:

[1] Specific Core Curriculum requirements.

[2] Students must take the Fundamentals of Engineering exam prior to graduation.

[3] Breadth Requirement Elective: Students must take one elective in four of the possible six sub-disciplines: Construction, Environmental, Geotech, Structures, Transportation, or Water Resources.

[4] Depth Requirement Elective: Students must take two additional electives in an area of concentration within any of the sub-disciplines in which they took Breadth Requirement Electives. Electives must be at least a 400 level Civil Engineering course.

[5] See advisor for a list of approved Breadth and Depth Requirement Electives.

Revised text in Course Catalog (changes are highlighted in yellow):

Bachelor of Science in Civil Engineering

The Bachelor of Science in Civil Engineering (B.S.C.E.) program is accredited by the Engineering Accreditation Commission of ABET. The **Educational Objectives** of the Civil Engineering program are:

1. Prepare our graduates for successful professional practice or advanced study in civil engineering.
2. Provide our graduates with a broad education as a foundation for professional licensure and life-long learning.
3. Produce graduates with an appreciation for social, economic and ethical issues related to civil engineering.

Curriculum

Credit hours required for graduation: 124

First Year	**First Semester**	**Credit Hours**
ENGL 110 (*or* ENGL 112; *or* ENGL 113)	Accelerated Composition (*or* Composition II; *or* Enhanced Composition) [(1)]	3
MATH 162	Calculus I [(1)]	4
CHEM 121	General Chemistry [(1)]	3
CHEM 123L	General Chemistry Lab [(1)]	1
CE 160L	Civil Engineering Design	3
		14
	Second Semester	
ENGL 120	Composition III [(1)]	3

MATH 163	Calculus II	4
BIOL 110 *-or-* EPS 101	Biology Non-Majors How the Earth Works-An Introduction to Geology	3
CS 151L	Computer Programming Fundamentals for Non-Majors Lab	3
PHYC 160	General Physics [(1)]	3
		16
Second Year	**First Semester**	
MATH 264	Calculus III	4
PHYC 161	General Physics	3
CE 202	Engineering Statics	3
CE 283	Surveying and Geomatics	3
ECON 105 *-or-* ECON 106	Introductory Macroeconomics [(1)] Introductory Microeconomics [(1)]	3
		16
	Second Semester	

MATH 316	Applied Ordinary Differential Equations	3
ENG 302	Fundamentals of Engineering: Electronic Circuits	1
ENG 303	Fundamentals of Engineering: Thermodynamics	1
ENG 301	Fundamentals of Engineering: Dynamics	1
STAT 345	Elements of Mathematical Statistics and Probability Theory	3
ENGL 219	Technical and Professional Writing [(1)]	3
	Core Humanities Elective	3
		15
Third Year	**First Semester**	
CE 302	Mechanics of Materials	3
CE 305	Infrastructure Materials Science	4
CE 331	Fluid Mechanics	4
CE 372	Principles of Construction	3
CE 382	Transportation Engineering	3

		17
	Second Semester	
CE 308	Structural Analysis	3
CE 335	Environmental and Water Resources Engineering	3
CE 350	Engineering Economy	3
CE 360	Soil Mechanics	3
	Core Fine Arts Elective [1]	4
		16
Fourth Year [2]	**First Semester**	
	Breadth Requirement Elective [3] [5]	3
	Breadth Requirement Elective [3] [5]	3
	Breadth Requirement Elective [3] [5]	3
	Core Second Language Elective [1]	3
	Core Humanities Elective [1]	3

		15
	Second Semester	
CE 499L	Design of Civil Engineering Systems	3
	Breadth Requirement Elective [3] [5]	3
	Depth Requirement Elective [4] [5]	3
	Depth Requirement Elective [4] [5]	3
	Core Social and Behavioral Sciences Elective [1]	3
		15

Notes:

[1] Specific Core Curriculum requirements.

[2] Students must take the Fundamentals of Engineering exam prior to graduation.

[3] Breadth Requirement Elective: Students must take one elective in four of the possible six sub-disciplines: Construction, Environmental, Geotech, Structures, Transportation, or Water Resources.

[4] Depth Requirement Elective: Students must take two additional electives in an area of concentration within any of the sub-disciplines in which they took Breadth Requirement Electives. Electives must be at least a 400 level Civil Engineering course.

[5] See advisor for a list of approved Breadth and Depth Requirement Electives.

UNM DEPARTMENT OF CIVIL ENGINEERING

CIVIL ENGINEERING (124 hrs)

Name: _____ Student # _____

Transfer Hours Accepted: _____ FE Exam taken _____

Fall						Spring					
FRESHMAN YEAR											
			Cr	Gr	Pts				Cr	Gr	Pts
Engl	101	Comp I: Exposition [1]	3	___	0	Engl	102	Comp II: Analys & Arg [1]	3	___	0
Math	162	Calculus I [1]	4	___	0	Math	163	Calculus II	4	___	0
Chem	121	General Chem [1]	3	___	0	Biol 110-NonMjrs or EPS101 ErthWork			3	___	0
Chem	123L	General Chem Lab [1]	1	___	0	CS	151L	CompProgFund/Lab	3	___	0
CE	160L	Civil Engr Design	3	___	0	Physcs	160	General Physics [1]	3	___	0
											0.00
			14		0.00				16		
SOPHOMORE YEAR											
			Cr	Gr	Pts				Cr	Gr	Pts
Math	264	Calculus III	4	___	0	Math	316	Appld Ord Diff Equas	3	___	0
Physcs	161	General Physics	3	___	0	Stat	345	Elements Math Stat	3	___	0
CE	202	Engineering Statics	3	___	0	ENG	TBD	Dynamics module	1	___	0
CE	283	Survey & Geomatics	3	___	0	Engl	219	Technical Writing [1]	3	___	0
Econ 105 Macro or ECON 106 Micro			3	___	0	ENG	TBD	Circuits Module	1	___	0
			0		0.00	ENG	TBD	Thermal Modulet	1	___	0
						___	_____	Core Humanities [1]	3	___	0
			16						15		
JUNIOR YEAR											
			Cr	Gr	Pts				Cr	Gr	Pts
CE	302	Mech Materials (202,316)	3	___	0	____	____	Core Fine Arts [1]	3	___	0
CE	305	InfraMatSci/Lab(219,302)	4	___	0	CE	308	Struct Analysis(302,305)	3	____	0
CE	331	FluidMech/Lab (202,306)	4	___	0	CE	335	Envir WR Engin(331)	3	___	0
CE	372	Princ of Construction	3	___	0	CE	350	Engin Econ (162)	3	___	0
CE	382	TransportEngr(283)	3	___	0	CE	360	Soil Mechanics/Lab(302)	4	___	0
			0		0.00				0		0.00
			17						16		
SENIOR YEAR											
			Cr	Gr	Pts				Cr	Gr	Pts
____	____	Core Humanities [1]	3	___	0	CE	499	Design of CE Systems	3	___	0
____	____	Core Second Lang [1]	3	___	0	____	____	Breadth Req Elective [3]	3	___	0
____	____	Breadth Req Elective [3]	3	___	0	____	____	Depth Req Elective [4]	3	___	0
____	____	Breadth Req Elective [3]	3	___	0	____	____	Depth Req Elective [4]	3	___	0
	____	Breadth Req Elective [3]	3	___	0	____	_____	Core Soc/Behav Sci [1]	3	___	0
			0		0.00						0.00
			15						15		
		Repeated Courses									
		None	3	___	0						
			3	___	0						
			3	___	0						
			3	___	0						
			3	___	0						

NOTES	
1.	Grade of C or higher required for all Core courses.
2	Core and breadth/depth electives from approved list.
3	Breadth Requirement: 1 elective in 4 of 6 areas.
4	Depth Requirement: 2 additional 400-level CE courses.
5	Student must take FE exam prior to graduation.

OVERALL HOURS & GPA

05-Dec-14

CE 8/13

October 23, 2014

Reason for Request for change to Civil Engineering undergraduate curriculum

In an effort to provide a more efficient delivery of course material, the following changes have been suggested by our Industry Advisory Board and Civil Engineering Faculty.

1. Physics 167 Problems has been required to be taken in conjunction with the Physics 160 General Physics course. However, often transfer students receive credit for the Physics 160 class but do not obtain credit for the Physics 167 class. The Physics department does not recommend taking the Physics 167 as a stand-alone class and thus the transfer students are asked to find a 1 credit Physics related course as a substitute. The proposal is to remove the requirement for Physics 167 in order to treat transfer and non-transfer students equally. As a problems class, Physics 167 is intended to enhance the skills that are taught in Physics 160 and should remain optional instead of mandatory.
2. The CE 409 Engineering Ethics class was added to the curriculum to meet the needs of the ABET accreditation. Since the ABET accreditation criteria has changed to an outcomes based requirement, the stand alone CE 409 class no longer meets the ABET criteria. As the 1 hour class is only taught 2 days a week for half a semester, faculty hours and class room space is being obligated for a full semester on a topic that is no longer required as a stand-alone course. It is recommended that the class be dropped from the curriculum.
3. Currently Civil Engineering students have an option of taking either ME 301 Thermodynamics or ECE 203 Circuits. In this configuration, the students are not graduating with an understanding of both of these engineering fundamentals. However, the full semester course is more detail than a Civil Engineering student is required and exceeds the requirements for materials as established by the Fundamentals of Engineering exam. It is recommended that this requirement be dropped and that 1 hour module classes in both topics, Thermodynamics and Circuits, be offered in their replacement. The School of Engineering is concurrently developing the module courses and submitting the requisite Form Bs.
4. The current material offered by the ME 306 Dynamics course exceeds the requirements that are needed for the Civil Engineering students taking the Fundamentals of Engineering exam. It is recommended that a 1 hour module course be used to replace the requirement for a 3 credit hour course. The School of Engineering is concurrently developing the module course and submitting the requisite Form B.

The combination of these changes will result in the following:

Existing program has 129 hours
Drop Phys 167 problems - 1 hour

Drop CE 409 Ethics - 1 hour
Drop ME 306 Dynamics - 3 hours
Drop ECE 203 or ME 301 - 3 hours
Add 1 hour modules in Dynamics, Thermo, and Circuits +3 hours
Proposed program has 124 hours.

Justification, Planning, Budget and Workload for Civil Engineering curriculum changes 23 October 2014

Justification for the program – The requested changes will result in a reduction of credit hours from 129 to 124. The reduction in credit hours provides a more efficient path for students to obtain their Civil Engineering Degree without jeopardizing the quantity of material learned.

Impact on long range planning – There should be minimal impact on the courses being taught. As the ME and ECE courses are being taught in module form with less hours per class it is anticipated that the faculty teaching load will slightly decrease.

No additional budget is required to implement this change.

Faculty Workload – The CE 409 class is currently being taught by an adjunct professor and thus this requirement will be eliminated. The Physics 167 class is part of a larger class and thus the workload of the instructors may reduce slightly. For the module classes, the reduction in students in the 3 credit hour class and replacement with a 1 credit hour class should result in a slightly lower workload.