

**Course Information**

Date Submitted: 9/28/2015

Current Prefix and Number: MNG - Mining Engineering , MNG 291 ELEMENTS OF MINE DESIGN

Other Course:

Proposed Prefix and Number: MNG 291

What type of change is being proposed?

Major Change

Should this course be a UK Core Course? No

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OFFICE OF THE  
SENATE COUNCIL**1. General Information**

a. Submitted by the College of: ENGINEERING

b. Department/Division: Mining Engineering

c. Is there a change in 'ownership' of the course? No

If YES, what college/department will offer the course instead: Select...

e. Contact Person

Name: Jhon Silva

Email: jjsilv3@uky.edu

Phone: 8592571173

Responsible Faculty ID (if different from Contact)

Name:

Email:

Phone:

f. Requested Effective Date

Semester Following Approval: No OR Effective Semester: Spring 2016

**2. Designation and Description of Proposed Course**

a. Current Distance Learning (DL) Status: N/A

b. Full Title: ELEMENTS OF MINE DESIGN

Proposed Title: ELEMENTS OF MINE DESIGN

c. Current Transcript Title: ELEMENTS OF MINE DESIGN

Proposed Transcript Title:

d. Current Cross-listing: none

Proposed – ADD Cross-listing :

Proposed – REMOVE Cross-listing:

e. Current Meeting Patterns

LECTURE: 1

LABORATORY: 2

Proposed Meeting Patterns

LECTURE: 2

LABORATORY: 2

f. Current Grading System: ABC Letter Grade Scale

Proposed Grading System: *Letter (A, B, C, etc.)*

g. Current number of credit hours: 2

Proposed number of credit hours: 3

h. Currently, is this course repeatable for additional credit? No

Proposed to be repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester? No

2i. Current Course Description for Bulletin: Practical knowledge of computational tools used in mine design projects for both underground and surface mining. Basic elements in modern mine modeling through the manipulation of software packages commonly used by mining engineering. Projects will cover the areas of surveying, geology, economics, and mining.

Proposed Course Description for Bulletin: Practical knowledge of computational tools used in mine design projects for both underground and surface mining, including a programming language and geology/mining modeling software. Geological and mining engineering modeling through the manipulation of software packages commonly used by mining engineers. Projects will cover the areas of surveying, geology, economics and mining.

2j. Current Prerequisites, if any: Prereq: MNG 191, MNG 264

Proposed Prerequisites, if any: Prereq: MNG 191, MNG 201, or consent of instructor

2k. Current Supplementary Teaching Component:

Proposed Supplementary Teaching Component: No Change

3. Currently, is this course taught off campus? No

Proposed to be taught off campus? No

If YES, enter the off campus address:

4. Are significant changes in content/student learning outcomes of the course being proposed? No

If YES, explain and offer brief rationale:

5a. Are there other depts. and/or pgms that could be affected by the proposed change? No

If YES, identify the depts. and/or pgms:

5b. Will modifying this course result in a new requirement of ANY program? Yes

If YES, list the program(s) here: B.S In Mining Engineering

6. Check box if changed to 400G or 500: No

## Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1. How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2. How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3. How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4. Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5. How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6. How do course requirements ensure that students make appropriate use of learning resources?

7. Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8. How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (<http://www.uky.edu/UKIT/>)?

9. Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10. Does the syllabus contain all the required components? NO

11.I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|HONAKER|Rick Honaker|MNG 291 CHANGE Dept Review|20140921

SIGNATURE|BJSTOK0|Barbara J Brandenburg|MNG 291 CHANGE College Review|20150828

SIGNATURE|JMETT2|Joanie Ett-Mims|MNG 291 CHANGE Undergrad Council Review|20151014

**Syllabus MNG 291 - Elements of Mine Design**  
**Department- Mining Engineering**  
**Spring Semester 2016**

3 Credit Hours

Instructor: Jhon Silva  
**Lecture:** R. 2:00-3:50pm  
**Lab:** R. 4:00-5:50pm  
 Office: Room 234H MMRB  
[jsilv3@uky.edu](mailto:jsilv3@uky.edu)  
 MMRB 125  
 859-257-1173

**Office Hours: By e-mail appointment:**  
**Email:**  
**Meeting Location:**  
**Office Phone:**

**Course Description:**

Elements of Mine Design introduces students to the practical knowledge of computational tools used in mine design projects for both underground and surface mining, including a programming language and geology/mining modeling software. Geological and mining engineering modeling through the manipulation of software packages commonly used by mining engineers. Projects will cover the areas of surveying, geology, economics and mining. (3 cr. hrs: 2 lecture hrs, 2 lab hrs).

**Prerequisites:**

MNG 191, MNG 201, or consent of instructor

**Student Outcomes:**

<b>Course Outcome</b>	<b>ABET Student Outcome</b>	<b>Implementation Strategy</b>
1. Use skills, techniques and modern engineering tools to evaluate mineral reserves	(a), (k)	Partial and final projects
2. Use skills, techniques, and modern engineering tools to select a suitable mining method and a develop a preliminary mine design	(k)	Final Project report
3. Demonstrate ability to work in a team environment	(d)	Final Project report
4. Ability to visualize, analyze and interpret data from areas as survey and geology	(e)	Individual tests

**Student Outcomes assessed in MNG 291 (ABET) – Upon completion of this course students shall demonstrate:**

- (a) an ability to apply knowledge of mathematics, science and engineering
- (d) an ability to function on multidisciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

**Required Materials:**

1. Course notes provided by instructor;
2. Autocad Manual;
3. Carlson Command Reference Manual;
4. Carlson Mining & Advanced Mining Modules Manual;
5. VULCAN Command Reference Manual.

## General Description of Course Activities

Week	Topics	Assignments	General Topic	
1	Autocad concepts. Variables and environment.		for mining software	Drafting
2	Basic entities. Polylines, Polygons, Hatch.	HW1		
3	Editing tools, Layers, distances, area calculation.			
4	Annotate, plotting, scaling, Autolisp overview.	Project 1		
5	Introduction to Carlson-Vulcan. Fundamentals ACAD-Carlson-Vulcan environment. Settings	HW2	CARLSON-VULCAN	Fundamentals
6	Carlson Menus. Survey, Civil, Natural Re-grade, Geology, Surface Mining, Underground Mining.	Project 2		
7	Coordinate Files. Import - Export coordinates files. Point attributes. Point Utilities	Midterm Exam		
8	Triangulate and Contours. Triangulation utilities, Contours utilities. Volumes by triangulation.	Project 3		
9	Fundamentals Grid Files. Type of grid files. Grid files utilities. Surfaces	HW3		
10	Geology, Geology settings. Drill holes. Import -export drillholes. Geologic Columns.			Geology
11	Strata grid files, Isopach Maps, quality maps, faults, variograms. Fence Diagram, Block diagram	HW4		
12-13	Reserves. Reserves Classification. Surface Mine Reserves. Underground mine reserves.	Second Exam		Mining
13-14	Design tools, Surface and Underground mine design.	Project 4		

## Course Assignments

Item	<u>% of Grade</u>
Four main projects will be provided to the students (Project 1 to 4).	
Project 1. ACAD Fundamentals	20%
Project 2. Carlson-Vulcan Fundamentals	10%
Project 3. Carlson-Vulcan GEOLOGY	15%
Project 4. Carlson-Vulcan MINE DESIGN	15%
Four assignments (Homework) will be provided (HW1 to HW4) (5% each)	20%
Two exams will be administered at 10% each	20%
Total	100%

## Summary Description of Course Assignments

Each student will be given a set of acad, geology and mine data to be utilized throughout the course in their projects. Four projects will be assigned for which the students will be required to complete independently. Independent completion of the four projects will ensure that each student has the ability to meet the course outcomes which includes the understanding of the fundamentals of using mine design software for reserve estimations and mine design. The four projects will require a written report of the observations obtained from using the mining software.

- Project 1: Construction of a topographic map using data collected from a topographic survey,
- Project 2: Import and analysis of a geological data base (drill hole information),
- Project 3: Create a geological model for tabular and orebody type deposits,

- Project 4: Fundamental design of a surface and underground mine operation.

Homework will include the construction of a map using the topographic data given in class, calculation of volume between surfaces, solids generation and volume, grade and tones calculation, geological cross sections and isopach maps. Two exams will be administered. The exams are used to evaluate, individually, the understanding of the fundamentals of using mine design software.

### Course Grading

<u>Total Point Earned</u>	<u>Final Grade</u>
90 – 100	A
80 – 89.9	B
70 – 79.9	C
60 – 69.9	D
< 60	E

### Mid – Term Grades

Midterm grades will be posted on myUK by the deadline established in the Academic Calendar (<http://www.uky.edu/Registrar/AcademicCalendar.htm>).

### COURSE POLICIES:

**Course Assignments:** No late assignments will be accepted with the exception of the occasions when submission is delayed due to an excused absence as defined by S.R. 5.2.4.2.

**Exams:** Tests can only be made up for excused absences or by pre-arrangement with the course instructor.

### Excused Absences

Students need to notify the professor of absences prior to class when possible. *Senate Rules 5.2.4.2* defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit “reasonable cause for nonattendance” by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737, [http://www.uky.edu/Ombud/ForStudents\\_ExcusedAbsences.php](http://www.uky.edu/Ombud/ForStudents_ExcusedAbsences.php)).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused) per University policy.

Per *Senate Rule 5.2.4.2*, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

### Verification of Absences

Students may be asked to verify their absences in order for them to be considered excused. *Senate Rule 5.2.4.2* states that faculty have the right to request “appropriate verification” when students claim an

excused absence because of illness, or death in the family. Appropriate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

### **Academic Integrity**

Per University policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the University may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

*Senate Rules 6.3.1* (see <http://www.uky.edu/Faculty/Senate/> for the current set of *Senate Rules*) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording, or content from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work (including, but not limited to a published article, a book, a website, computer code, or a paper from a friend) without clear attribution. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work, which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

### **Accommodations due to disability**

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them

via phone at (859) 257-2754 and via email at [drc@uky.edu](mailto:drc@uky.edu). Their web address is <http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/>.