New Undergraduate Course Approval Cover Form
Montana State University

This four-page form collects basic information about the proposed new course, provides information on the approval process, and includes all required approvals. Additional information (see INFO sheet) is also required as part of the New Course Packet.

Proposed New Course Information

Requested Rubric, Course Number, Core Designation (if needed): DDSN 245
Course Title: Civil Drafting
Abbreviated Course Title (~30 chars): Civil Drafting
First Semester to be Offered: Spring 2014
Submitted by: Dave Johnston
Submitters Contact Info: Phone, Email: 579-9037
Instructor: TBD
Department: Design Drafting
College: Gallatin College

New Course Review Process

Instructor completes the New Course Packet, with Core information if a Core designation is requested.

Instructor checks for "equivalent" course in the MUS system and recommends a common or unique course number.

Department Head's signature indicates that course has been approved by the process used within the Department.

The Chair of the College Curriculum Committee signs to indicate college academic approval.

The College Dean signs to indicate that adequate resources are available to offer the course. Supporting information (Dean's Statement) is typically required.

The New Course Packet (as PDF) is submitted to the Provost's Office for distribution to other committees.

Course requests are sent to Curriculum and Program Council (CPC). Core requests are sent to appropriate Core Subcommittee. Committees work in parallel where possible to speed approval process. Special topics courses (251, 491) skip the CPC review (limited to two years.)

Provost's Office reviews the new course request. New courses are submitted to MUS for Common Course Number (CCN) review. Dean and Department reviewed upon approval.

Approved new course sent to Registrar for inclusion in the Catalog and Schedule of Classes

Check here if "Special Topics" x91 course: □

Note: This diagram illustrates the typical flow path, but at any review step there can be a request for additional information or modifications. Careful review in early steps is the best way to speed the overall process. * Special topics courses (x91) require fewer signatures, but cannot be offered more than two times without committee review.
New Undergraduate Course Approval Cover Form
Montana State University

This four-page form collects basic information about the proposed new course, provides information on the approval process, and includes all required approvals. Additional information (see RNF sheet) is also required as part of the New Course Packet.

Proposed New Course Information

Requested Rubric, Course Number, Core Designation (if needed): DDSN 245

Course Title: Civil Drafting
Abbreviated Course Title (≤30 char): Civil Drafting
First Semester to be Offered: Spring 2014
Submitted by: Dave Johnston
Submitter’s Contact Info: Phone, Email: 579-9037
david.johnston1@montana.edu
Instructor:
Department: Design Drafting
College: Gallatin College

New Course Review Process

Instructor completes the New Course Packet, with Core information if a Core designation is requested.
Instructor checks for “equivalent” course in the MUS system and recommends a common or unique course number.

Department Head’s signature indicates that course has been approved by the process used within the Department.
The Chair of the College Curriculum Committee signs to indicate College academic approval.
The College Dean signs to indicate that adequate resources are available to offer the course. Supporting information (Dean’s Statement) is typically required.

The New Course Packet (as PDF) is uploaded to the Provost’s Office server for distribution to other committees.

Course requests are sent to Curriculum and Program Committee (CPC). Core reviews are sent to appropriate Core subcommittee. Committees work in parallel when possible to speed approval process. Special topics courses (291, 491) skip the CPC review (limited to two years.)

Provost’s Office reviews the new course request. New courses are submitted to MUS for Common Course Number (CCN) review. Dean and Department informed upon approval.

Approved new course sent to Registrar for inclusion in the Catalog and Schedule of Classes.

APPROVALS

Submitter * 
Department Head * 
Chair, College Curriculum Comm. 
Dean * 
Chair, Core Subcommittee (if app.) 
Chair, CPC
Assoc. Provost * 

Note: This diagram illustrates the typical flow path, but at any review step there can be a request for additional information or modifications. Careful review to early steps is the best way to speed the overall process. Special topic courses (291) require fewer signatures, but cannot be offered more than two times without committee review.
INFORMATION NEEDED FOR COMMON COURSE NUMBERING

The process for identifying a common course number for a new course is as follows:

1. Course learning outcomes are prepared for the new course.
2. The person submitting the new course request looks at the CCN website to see if a course with similar outcomes already exists in the MUS system.

   www.mus.edu/Qtools/CCN/ccn_default.asp

   • If a course exists with at least 80% of the same outcomes, the course is considered “equivalent” to the proposed new course, and the new course should use the existing rubric and course number.
   • If no “equivalent” course is found, the person submitting the new course request should identify a unique course number that has not been used by any other course in the MUS system.

3. The requested rubric and course number are submitted as part of the new course packet.
4. The Provost’s Office submits the learning outcomes and the requested rubric and course number to the MUS to have a course number assigned to the course. (This will typically be the requested course number, but it could be changed.)
5. The assigned common course number is reported back to the person submitting the new course request.

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Requested Rubric, Course Number, Core Designation (if needed):

<table>
<thead>
<tr>
<th>Course Title:</th>
<th>DDSN 245</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbrev. Course Title (≤ 30 char):</td>
<td>Civil Drafting</td>
</tr>
<tr>
<td>Credits:</td>
<td>3</td>
</tr>
<tr>
<td>Department Offering Course:</td>
<td>Design Drafting</td>
</tr>
<tr>
<td>College:</td>
<td>Gallatin College</td>
</tr>
</tbody>
</table>

Is this course “equivalent” to a course in the MUS System?:

☐ Yes  ☐ No

Learning Outcomes for the Course:

- Describe how land information is measured, collected, managed, and used to produce engineering drawings
- Translate CAD information into alignments, profiles, and sections
- Demonstrate how to gather points to use in a database
- Generate a topology of terrain
- Create and manipulate surface and design profiles and plans
INFORMATION REQUIRED BY THE REGISTRAR

The data needed to enter the new course into the MSU Catalog and Schedule of Classes is collected on this page. Once the new course has been approved, this page is automatically forwarded to the Registrar for data entry.

<table>
<thead>
<tr>
<th>AssignedRubric, Course Number, Core Designation (if needed):</th>
<th>DDSN 246</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Title (for Catalog):</td>
<td>Civil Drafting</td>
</tr>
<tr>
<td>Course Title (for Schedule of Classes, 90 characters, max.):</td>
<td>Civil Drafting</td>
</tr>
<tr>
<td>First Semester to be Offered:</td>
<td>Spring 2014</td>
</tr>
<tr>
<td>Restricted Entry/Consent of Instructor Required:</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>Instructor's BID (last 4 digits only):</td>
<td></td>
</tr>
<tr>
<td>Department Offering Course:</td>
<td>Design Drafting</td>
</tr>
<tr>
<td>College:</td>
<td></td>
</tr>
</tbody>
</table>

Is the requested course number available? (x4155 to check): □ Yes □ No

Frequency of course offering:
- [ ] Annually
- □ Alternate Years, starting __________
- [ ] Summer
- [ ] Fall
- [ ] Spring
- [ ] First 6 weeks
- [ ] Second 6 weeks
- [ ] 12 weeks

Credits by mode of instruction:
- Lecture: 3
- Seminar: __
- Independent Study: __
- Lab/Studio: __
- Practicum/Discussion: __
- TOTAL CREDITS: 3

Primary Mode(s) of Delivery:
- [ ] Face-to-face
- [ ] Web-Enhanced (small on-line comp.)
- [ ] On-Line Only
- [ ] Blended (significant on-line portion)

Time and Location – Call the Registrar’s Office at x4155 to find a time and location for the course.

- Assigned Day(s): M □ Tu □ W □ Th □ F □ Sa □ Su
- Assigned Time(s): 6:10pm - 8:40pm
- Assigned building: Hamilton Hall
- Assigned Room: 228
- Capacity (room capacity, or enrollment “cap”): 15

Co- and Pre-Requisites – Courses numbered 200 and above are normally expected to have prerequisites. When listing multiple prerequisites, please separate courses with “and” if both are required, or “or” if only one is required.

Prequisite(s): Ddsn 118 - CAD-1; Ddsn 124 - Descriptive Geometry; Ddsn...

Co-Requisite(s): Ddsn 118 - CAD-1; Ddsn 124 - Descriptive Geometry; Ddsn...

Course Description – Provide a course description of 40 words or less for the MSU Catalog.

This course builds upon previous CAD experience and applies those skills to creating drawings specifically for the Civil Engineering Industry, focusing on basic engineering principles like: survey data, acquisition, contour/break lines, azimuth/bearing, latitude/longitude, slope and grade calcs.
DEAN’S STATEMENT

The reviewing committees are being asked to take a closer look at the resources required for each proposed new course. In many cases new courses will replace existing courses and the new course request is effectively resource neutral, however that is not always the case. For example, a new elective course that would result in distributing an existing student population across a larger number of courses would represent a significant increase in expenditures for the new course, and no increase in total student credit hours. A funding mechanism for such a course would need to be identified. The Dean’s Statement is the place to document how the costs of the proposed new course will be covered.
New Course Packet - DDSN 245 – Civil Drafting
Gallatin College - Montana State University

2. New Undergraduate Course Narrative

General Course Information
1. Requested Rubric, Course Number, and Core Designation (if any)
   > DDSN 245

2. Course Title
   > Civil Drafting

3. Provide a general description of the course explaining the need for the course, its goals, and its overall structure. This is the most important part of the application and should offer a good sense of what students will experience by taking this class.

   > This course builds upon previous CAD experience and applies those skills to creating drawings specifically for the Civil Engineering industry. Instruction will be given relating to basic engineering principles like: survey data, acquisition, contour/break line creation, azimuth/bearing calculations, coordinate systems, latitude/longitude, and slope/grade calculations. Projects will primarily use AutoCAD Civil 3D software.

   Each class period will include a lecture, instructor demonstration of software use, and student exercise with guided help and instruction.

4. Based on what types of student work (e.g., tests, homework assignments, papers, performances, etc.) will grades be determined?

   > Grading criteria will consist of intermediate and final projects, quizzes and tests covering software applications and basic design principles. Attendance in class and participation in discussions will be a major element in student evaluation.

5. Provide a course content outline containing all major topics plus a brief description of the material to be covered under each major topic heading.

   > Upon Course Completion, the student will be able to:
6. List required texts or other required references.

> No text will be required.

7. What are the estimated enrollment and student credit hour (SCH) production?
[SCH = (enrollment * credits)]

> 15 students * 3 credits = 45 SCH

8. Will there be an enrollment cap that restricts enrollment below the level of student demand? If so, what is the enrollment cap and why is it necessary?

> 15, classroom capacity

9. Will course be a “restricted enrollment” course? If so, why is restricted enrollment necessary?

> Enrollment will only be restricted by the satisfactory completion of the course prerequisites.

10. Describe how the success of the course will be evaluated? (“End-of-semester student evaluations” is not the answer to this question. How will the instructor determine if the learning outcomes are being met, and how will the department determine if the course is fulfilling its intended purpose?)

> Student mastery of learning outcomes will be evaluated in the grading of quizzes, tests, and projects. The final project for the course will incorporate all outcomes and be weighted such that failure to have mastered those outcomes will result in a non-passing (lower than a C-) for the course.

Success of the course will be based on the ability of the students to independently use the software taught to create the assigned projects.

11. Is the instructor a member of the regular faculty (i.e., tenured or tenure-track)? If no, please describe the instructor’s qualifications, attach a Vita, and provide a separate letter of support, signed by the department head (or appropriate unit director), addressing the instructor’s qualifications to teach this course.

> Instructors have not been hired but will be individuals working as a engineers or drafting technicians more than 5 years.
**Level of Offering**

12. Has the course been offered previously under 280/291 or 480/491? If so, when? Under what number? What was the enrollment? What level of students took the course?

> No.

13. Justify the level of course offering.

> This course is a requirement for a two-year Associates of Applied Science degree, and requires 100-level courses as prerequisites; therefore the course is 200-level.

**Relationship to other Courses, Curricula, and Departments**

14. Does this course build on or interrelate with other courses in your curriculum or related curricula? If so, which ones?

> This course builds upon skills taught in DDSN 118 – CAD-1, DDSN 124 – Descriptive Geometry, and DDSN 186- CAD-2; it complements DDSN 244 – GIS/Mapping.

15. Do the topics in the proposed course duplicate or reiterate those in other courses in this or any other department? If so, how do the coverage and educational experience differ and how is this duplication or reiteration justified? Also, what liaison (which is expected in cases of apparent overlap) has been conducted with other departments? Report reactions, both favorable and unfavorable.

> No.

16. What programs (departments, colleges) will be impacted by the SCH production of this course? That is, where do you think the SCH in the proposed course are likely to come from? If the expected SCH production of the proposed course is greater than 1000, and the SCH are expected to come from other colleges, what steps have been taken to make the other units aware of the potential loss of SCH? Report reactions, both favorable and unfavorable.

> There will be no negative impacts on any other departments or colleges. This course is a new elective offering to existing Design-Drafting Majors at Gallatin College and will attract New Enrollments from the community at-large of non-currently enrolled students.
17. If this proposed course has a significant interdisciplinary component, please explain briefly. Otherwise, indicate n/a.

>N/A

**Students Served**

18. Does the proposed course serve majors only? Non-majors only? Both majors and non-majors? What other majors might be interested in this course? State areas or disciplines to be served and indicate the specific efforts that will be made to make the course material relevant to all disciplines served.

> This course is open to Design-Drafting majors as well as any other interested and qualifies students. Interest in this course has been expressed by the College of Engineering, specifically the Civil Engineering Department.

19. What additional resources (e.g., additional instructional FTE, required technologies), if any, will be required to offer this course? Are there any resource issues for the students who will take the course (e.g., required technologies, travel, on-line access requirements)? Will there be an additional fee charged to students taking this course? Please explain.

> This course will need to be taught in a computer lab capable of running the required software. Internet access is also required. No travel will be required. No additional fees will be charged. Students will be able to download educational versions of the software for use on their personal computers for free.

20. What existing information resources – print (books, journals, documents), audiovisual (videos, DVDs, CDs or other), and/or electronic (e-books, databases, electronic journals and web sites) – provided by the MSU Libraries will be used by students in this course? Provide examples as well as descriptive information. If additional information resources are necessary, please discuss those acquisitions with the library (x6549 Collection Development) at least three months prior to the beginning of the semester in which this course will be taught.

> none.

**Other Supporting Material**

21. Include any additional information you feel is needed to support this request.

>
PRELIMINARY CIVIL 3D CLASS OBJECTIVES AND BASIC OUTLINE
DDSN 245 – CIVIL DRAFTING

PREPARED BY: ERIK KIRSCH, P.E., P.L.S.  (Survey Manager / CAD Manager – Barnard Construction Company)

CIVIL 3D CLASS OUTLINE ASSUMPTIONS:

1. Most students will need some basic AutoCAD interface refreshment (drawing, plotting, annotating, etc.).

2. Most students will need instruction relating to basic engineering principles (survey data acquisition, contour/break line creation, azimuth/bearing calculations, coordinates systems, latitude/longitude, slope/grade calculations, etc.).

CIVIL DRAFTING EMPLOYMENT ASSUMPTIONS:

1. Most civil drafters will be employed by Engineering/Surveying Firms, City/County/State Departments (City Planning, Dept. of Transportation, etc.) and Heavy-Civil Contractors.

2. An appropriate class outline would be organized to include instruction for typical projects in each of the employment areas above. Although there are civil employment opportunities in specialized fields, the preliminary outline would focus on the current demand for land development projects, municipal water/sewer design, and engineering/surveying/construction for oil and gas distribution (i.e. Bakken Oil Field). However, the outline and objectives of the class should continue to adapt to the industry needs.

PROPOSED CIVIL 3D CLASS OUTLINE:

1. **Civil 3D is not only drafting, but design occurring at the same time.** A civil drafter will not receive redline drawings and make only annotative changes. Notes from supervising Surveyors, Engineers, and Contractors will require thought and basic design principles to complete the drafting assignment. Example: Develop a haul road alignment from Point “A” to Point “B” with a maximum grade of 10% and minimum horizontal curve radius of 100-ft.

2. The proposed class outline will utilize real-life projects and situations whenever possible. Intermediate and final project submittals by the students will be based off various engineering design, surveying, and construction projects the instructor has completed first-hand.

3. Handouts for each class objective/topic could include published information from State departments, City/County planning departments, etc. Examples: Gallatin County Subdivision Regulations, City of Bozeman Engineering standards for road design, National map accuracy standards, etc. This should help familiarize students with actual expectations by potential employers.
4. Each class period will include a lecture portion (minimal), instructor example on computer, and student exercise during class. The student exercise will continue as a homework assignment to be submitted prior to next class period.

5. Grading criteria could consist of intermediate and final projects, quizzes and test covering software and basic design principles. Attendance would be a major element in student evaluation.

PROPOSED CIVIL 3D CLASS OBJECTIVES:

OBJECTIVE 1: Understand/Refresh AutoCAD Basics. (WEEK 1-2)
- Tool Space
- Ribbon
- Transparent Commands
- Feature Lines
- Labeling (Lines, Curves, Contours)

OBJECTIVE 2: Understand Civil 3D Basic/Main Functions of the Software. (WEEK 1-2)
- Display Styles
- Survey
- Points / Point Groups
- Surfaces
- Parcels
- Alignments
- Profiles
- Assemblies / Subassemblies
- Corridors
- Cross sections / Mass Haul
- Pipe Networks
- Grading / Volume Calculations
- Quantity Takeoff

OBJECTIVE 3: Understand Basic Engineering/Survey Design Principles. (WEEK 3-4)
- Survey Data Acquisition
- Coordinate Systems
- Horizontal and Vertical Alignments
- Azimuth Bearing Calculations
- Slope/grade Calculations

OBJECTIVE 4: Understand Survey Point Groups and Surface Creation. (WEEK 5-6)
- Field exercise in data collection
- Create surface styles
- Create point groups
- Import survey data, create break lines, create TIN surface
- Label contour lines
OBJECTIVE 5: Understand Subdivision / Parcel Creation (WEEK 7-8)
- Enter record dimensions / bearings from Certificate of Survey
- Create interior lots utilizing parcel creation tools
- Label boundary lines / parcel areas
- Create Preliminary Plat per Gallatin County Regulations

OBJECTIVE 6: Understand Alignments and Corridor Creation for Road Design (WEEK 9-10)
- Develop horizontal and vertical alignments
- Develop profiles
- Develop assemblies for corridor creation
- Develop cross-sections and volume calculations

OBJECTIVE 7: Understand and Create Basic Pipe Network (WEEK 11-12)
- Create pipe network for water/sewer line.
- Utilize City of Bozeman Design Criteria

OBJECTIVE 8: Perform Quantity Takeoff for Heavy-Civil Construction Project (WEEK 13-14)
- Perform earthwork volume calculations
- Design contractor required haul roads and grading pads.
- Design storm water retention ponds

OBJECTIVE 9: Understand and Complete Construction Layout (WEEK 15)
- Create alignments and survey point lists for construction layout.
Dean’s Statement

This course will be offered to Design Drafting program students as one of the options within their degree program. The number of courses available to students will remain unchanged unless enrollment warrants, but this will allow Gallatin College some additional flexibility in course offerings for program students. Course costs will be covered by Gallatin College.
This course builds upon previous CAD experience and applies those skills to creating drawings specifically for the Civil Engineering industry. Instruction will be given relating to basic engineering principles like: survey data, acquisition, contour/break line creation, azimuth/bearing calculations, coordinate systems, latitude/longitude, and slope/grade calculations. Projects will primarily use AutoCAD Civil 3D software.

Each class period will include a lecture, instructor demonstration of software use, and student exercise with guided help and instruction.

Course Outcomes – DDSN-245 – Civil Drafting

By the end of the course, the successful student will know how to:

• Describe how land information is measured, collected, managed, and used to produce engineering drawings
• Translate CAD information into alignments, profiles, and sections;
• Demonstrate how to gather points to use in a database;
• Generate a topology of terrain;
• Create and manipulate surface and design profiles and plans.

Required Texts:  none

Required Materials:  Notebook  Computer with Internet Access

Instructor’s Advice: Don’t Fall Behind! Each class, lecture and assignment builds upon the previous, so do yourself a favor and stay up with what’s covered. If you have questions, are getting lost, or just don’t understand Let’s Talk!

Classroom Etiquette:  Cell phones are not to be answered inside the class room, including text messages. On time means 5 minutes early; have your materials (including computer) ready to go before class starts. Follow CAD LAB policy at all times. It is the student’s responsibility to obtain the information presented in class. Assignments will not be accepted late nor make-up tests and quizzes given unless prior arrangements have been made with the instructor.

See “Standard Syllabus Information” sheets for additional information.

Instructor reserves the right to add, modify or delete assignments and quizzes as deemed necessary for the progress of the class.
DDSN 245 – Civil Drafting

Grading Criteria

Quizzes and Tests approximately 20%
- Quizzes are given at the beginning of class; In-class Assignments are typically due before the start of the next class.

Projects approximately 70%
- Four projects. The first two are simple drawings, the third is a floor plan, and the fourth project, which is due on the last day of class, will include a floor plan, four exterior elevations, three sections, and an electrical plan.

Attendance / Participation approximately 10%

Grading Break Down
100% to 92 % = A 91% to 90% = A-
89% = B+ 88% to 82% = B
81% to 80% = B- 79% = C+
78% to 72% = C 71% to 70 % = C-
69% = D+ 68%-62% = D
61% to 60% = D- 59% and less = F

- Note: a grade of C- or better is required for program & prerequisite credit

Absences and Makeup work. It is the responsibility of the student to arrange to make up assignments and quizzes prior to the absence. The instructor will not “re-teach” material that is missed; it is recommended that you communicate with fellow students regarding any missed lectures, quizzes and assignments. Assignments or quizzes turned in or taken late without prior instructor approval will automatically have their scores reduced.


ATTENDANCE IS REQUIRED AT ALL CLASS MEETINGS. Although attendance is required, there will be instances when students are not able to make it to class. Each student is allowed the equivalent of three weeks of classes for Excused Personal Days in Design-Drafting courses. An Unexcused Personal Day absence equals two excused absences.

An absence is considered excused if approved by the instructor. This should be submitted to the instructor in writing and excused PRIOR to the absence whenever possible.

Exceeding the amount of allowed personal days will result in a loss of credit for the course.

“School is your job.”