Course Description
Universal Design and Fabrication is designed to introduce students to effective design practices and fabrication skills – and examines how technologically driven delivery processes relate to and influence the communication. Importance will be placed on the development of conceptual skills, formal sensibilities, and technical abilities that allow designers to effectively and meaningfully communicate.

Course Objectives
• foster an enhanced understanding of the formal properties and processes of design
• understand the legacy of changing technologies and their impact on design
• develop skills that enhance the processing of information from the initial concept/sketch to the completed project.
• articulate ideas visually, in writing, and in speaking
• work collaboratively; share ideas and information with peers
• understand the differences of Universal Design vs. Human Centered Design
• gain a better understanding of heuristics in how they are used in design.
• learn about human-based design and basic ethnography
• foster student skills in craftsmanship, professionalism, composition and work habits

Coursework
Coursework will consist of exercises and projects. Class time will consist of a combination of lectures, presentations, critiques, collaborative opportunities and project work time. You are required to take notes during class critiques and presentations. This includes feedback from your classmates and information and directions from me.

There will never be opportunities to print or assemble work during class. Homework must be completed prior to the beginning of class on the day it is due. All printing and mounting must be done before class begins.

We will use D2L as an online augmentation to our class time. Students will be required to use D2L to retrieve their project briefs, turn in compiled documents of their work for each assignment, check their grades, post information for other classmates and to check for announcements. It is recommended students check their email and D2L site daily.

Workload Statement
Workload will consist of exercises, projects, and assigned readings. Class time will consist of a combination of lectures, presentations, critiques, collaborative opportunities and project work time. Students are required to take notes during class critiques and presentations. This includes comments from
other classmates and information and directions from instructor.

There will be three main projects, accompanied by exercises:

**Project 1**
- p1 exercise(s)

**Project 2**
- p2 exercise(s)

**Project 3**
- p3 exercise(s)

Prototype fidelity will be based on individual student skill level.

This course will use D2L as an online augmentation to class time. Students will be required to use D2L to retrieve their project briefs, post information for other classmates and to check for announcements. It is recommended students check their email and D2L site daily.

This class does not emphasize teaching software; Students are encouraged to form study groups and use online resources (such as lynda.com) to become experts in programs they want to use during the class.

**Expected Course Workload** (three credit hour course, 15 weeks)

**Class** (5/week, 75 hours overall): lecture, presentation, discussion, collaboration, critique, idea sharing, progress reviews

**Outside Studio** (10/week, 90 hours overall): project/problem active research, idea development, reading/written components, planning, exploration, process, prototypes, production, and finished product(s) development

**Total: 165 hours**

It is expected that all work will be the student’s original creation (or creations in acknowledged collaboration) in accordance with the specifications communicated in project briefs. See the UWM Academic Misconduct Policy link below. Plagiarism is the use of others’ words, images or ideas without clearly acknowledging the source of the information. Common instances of plagiarism include—but are not limited to—the use of others words (directly or in paraphrase) without citation or with incorrect citation, submitting work that is not the student’s own original effort, submitting the same work for multiple courses without prior consent (self-plagiarism), or using images that are not original without proper acknowledgment/Attribution.

If a student has been identified as having committed plagiarism, the student will receive a zero for the project in which the plagiarism has occurred. Depending upon the circumstances and severity of the offense, additional disciplinary measures may be taken.

This estimated workload is, of course, only an estimate, and time investment will neither be evenly distributed throughout the semester nor will everyone’s time investment be equal. It is also important to understand that you will be evaluated on the quality of the work you turn it, and not on the number of hours you spend on that work, although there is a correlation between time investment and successful outcomes.
Writing
The ability to write and speak about work to clients and colleagues is crucial to effective design practice. Your skill level in this area will have a large impact on where you can work and how far you can go in professional practice. Verbal and written articulation will be evaluated with each project, thus impacting your overall grade for the class. It is strongly recommended that you utilize the UWM Writing Center for assistance if you need in-depth assistance with writing.

Taking Notes
Students are required to take notes during class on lectures, discussions and critiques, and the course readings. These notes will help students refine their work, strengthen ideas and understand the course material, as well as study for exams. Students learn most when they take notes by hand.

Course Readings
ANY recommended readings will be available via PDF on D2L.

Required Tutorial Site Use:
Lynda.com membership is free for students. Assigned participation in lynda.com tutorials will be given throughout this semester with time deadlines. Certificates of completion will be required to be included in process books.

Project Deliverables
Students must hand in their completed projects as follows:

• process book and final work
• Identify each project properly (project labels)
  Affix a project label to both the back of the mounted project and the front of all process book(s). If you have multiple process books, be sure to number them (book 1 of 3, etc)
• All projects need to be turned in as compiled digital and PDF files to the D2L project drop box at the time the project is due.

Process Books and Project Labels
A separate brief will describe the requirements for Process Books and Project Labels, which are required for each project.

Studio Course Fee
A course fee will be charged for use of consumables and communal materials provided by the studio. Any additional materials needed to complete projects will be the responsibility of the student.

If the Student wishes to opt-out of the College acquiring their program materials, the Student may contact Chad Bridgewater on or before 02/01/2019; if no contact is made by that time, the Student will be deemed to have opted-in. Students opting out of this process will be reimbursed for the cost of program materials and will be personally responsible to acquire these materials. Note that materials may cost significantly more when not obtained through the College.

Materials
• technical pens, illustration markers
• Pencils, #2
• white vinyl eraser
• Bienfang Graphics 360 marker paper pad 9" x 12" (suggested)
• x-acto knife and blades for cutting prints
• cutting surface at least 12 x 18"
• 18" cork backed steel ruler
• sketchbook of good quality drawing paper
• masking tape
• 3m Super 77 Multipurpose Adhesive (use spray mount only in vent hoods or outdoors, NEVER in hallways or classrooms) or use Grafix Double Tack mounting film (you do not need both spray and dry adhesive; use either/or)
• rubber cement pick-up (works to clean-up spray adhesives)
• sturdy portfolio to safely transport and turn in projects
• 1GB minimum flash drive
• black foam core
• 3-hole tab paper/poly folders for process books
• Tabs for process books (write-on or sticker tabs, NOT paper insert tabs)
• Adobe Creative Cloud
• Digital Calipers

*Additional materials and supplies will be needed based on individual student projects
*Course fees will cover specialty materials such as plastic filament for 3D Printers

Software:
Vectary, Tinkercad, Onshape and various other 3D modeling programs. Rhino and Fusion are available on Lab computers. Adobe Creative Cloud.

Out-of-class Requirements
Students will need to have access to all necessary computer technology, printers, and software to complete all assignments. Adobe software and desktop computers are available in UWM’s computer labs, although you may choose to use a personal laptop for most, if not all, of your coursework. Access to KSE iStudio will be available as well. Open hours will be posted by the second week of classes. No student may work alone in the KSE iStudio labs. Students must schedule out of class worktime with a classmate or when the labs are being monitored.

CAD Lab Studio Access: Combination# ____________

You will need to print in-process designs for critique, revised designs, and your final work. For black and white preliminary designs, you can print through the campus services (using your e-panther card). For higher-quality prints, please choose from the following vendors:

Students will need to either purchase a printer for their high-quality digital output, or they will need to use a local vendor to output their work. Below is a compiled list of printers and vendors (as of August 2018).

PRINTERS (for high-quality output/Amazon pricing 8/2018)
13 x 19 wide-format inkjet printers
• CANON PIXMA IX6820 Wireless Business Printer $136.00
• CANON Pixma Pro Inkjet Printer $299.28
PRINTING RESOURCES

On Campus
• Bolton 225
• Library Learning Commons
• Union W199
• Union Marketing (75% off)
• Sandburg C280 (24 hrs. for Sandburg residents)

Off Campus
• Digital Edge
• Digi Copy
• Clark Graphics
• FedEx/Kinkos (might try others 1st)
• Office Depot
• Walgreens

Books and Cards
• Zno (lay flat flush mount photo album)
• Lulu (print on demand books)
• Blurb (print on demand books)
• Chatbooks (print on demand books)
• Parabo Press (cards)
• Moo (business cards)
• Overnight Prints (postcards)

3D PRINTING
• Shapeways- www.shapeways.com (3D printing service)

The Class Community
You and your classmates constitute a community. It is crucial that everyone participates in the community (during critiques and discussions, for example), and supports its ecology. With that in mind, students must arrive to class on time, come prepared for the day’s activities, focus full, undivided attention during all lectures/discussions, and turn off all cell phones and other hand-held electronics. Students must also be willing and able to collaborate with other classmates, and share their knowledge with others. There will be many opportunities to use a laptop during class time, students may not be engaged in any non-class activities using their laptop, or work on projects for other courses.

Classroom Protocols
Water, coffee, tea, and soda in appropriate containers is allowed. Eating and snacking in class is prohibited. Should you spill any beverage, you must clean it up thoroughly. Be careful of others’ laptops, design work and personal belongings if you choose to drink during class.

Laptops and phones are "banned" during lectures unless the lecture specifically requires student to engage software along with the instructor. All students should put their phones away and close laptops during lectures. Numerous studies prove that they do not enhance learning, and that they distract others in the classroom. Unless a students has a VISA that stipulates that they need technology to take notes or communicate, students must take notes by hand.
Students must never cut paper, matte board or anything else without using a self-healing or designated cutting surface to protect classroom tables. Please do not write or scratch into the surfaces for any reason. These are expensive pieces of equipment and there is not a budget to replace them.

**Attendance**
As stated in the student handbook, student absences are not expected to exceed more than 10% of the number of the classes scheduled for the semester (3 classes), after which the instructor may elect to lower the student's grade for the course.

* 4th unexcused absence will result in 1 full letter reduction of final grade.
* 5th unexcused absence will result in 2 full letter reductions of final grade.
* 6th unexcused absence will result in 3 full letter reductions of final grade.
* 7th unexcused absence will result in **automatic failure of class**.

The allotted absences are to accommodate routine illness, weddings, car trouble etc. Doctor appointments, advisor conferences, trips to supply stores and employment, etc., should not be scheduled to conflict with class when at all possible. Faculty cannot and will not be placed in the position of determining which absences are excusable and which are not.

All students are expected to attend class on a regular basis. Prolonged illness should be verified by a physician and may require the student to withdraw from class if they cannot complete work in a comprehensive and timely manner.

If student is unavoidably late or absent, it is up to them to contact their classmates and get the information missed. If student contacts instructor ahead of time, instructor will make every effort to apprise student of the information they will be missing, but will not give individualized lectures for absentees or latecomers.

**Do not email instructor asking "what did I miss today?"**

Students should avoid attending class if they are ill. This is what the "free" absences are for. Recent research suggests that influenza is spread through simply breathing (not only coughing or sneezing). Individuals will recover more quickly if they stay home and rest. If they must go out and about, wearing a face mask over nose and mouth will reduce transmission, as well as alerting others to avoid contact.

Instructor will begin class promptly. Do not be late! Two late arrivals, or early departures, will be counted as one full absence.

Attendance will be calculated into students' final grade. This course has a total of 30 class periods, every absence will result in the loss of one point. Every late or early departure counts as an additional reduction of .5 point. At the end of the semester students' total point score will be averaged and count towards 5% of their final grade.

**Example:** 3 absences and 4 late arrivals = 25/30 = 5% of your final grade.

**Evaluation**
Each project will receive a score and will be evaluated according to the specific objectives and parameters outlined in the project brief.
All work, including work-in-progress, is due at the beginning of class (unless otherwise specified) on its published due date. Extensions are not granted unless there are extenuating circumstances that can be documented. An extension must be negotiated between the student and instructor well before the due date in question. Incomplete or late work (including preliminary work) will be downgraded one letter grade per day it is late unless otherwise indicated by the professor.

Students' final grade will be based primarily on the average of their project and exercise/quiz grades, but will also include evaluations of class participation/preparedness and attendance. Effort and intensity go a long way in this class, so be sure to participate actively and “go the extra mile”. Remember that a 'C' represents average and adequate work and performance. Incomplete or inadequate work and performance is below a 'C'. A's are only given for work and performance that truly excels in all aspects of content, idea, design, clarity, follow-through, efficiency, professionalism, attitude, growth, etc.

Final grades will be determined as follows:

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>TOTAL POSSIBLE POINTS</th>
<th>COURSE VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1</td>
<td>100</td>
<td>25%</td>
</tr>
<tr>
<td>Project 2</td>
<td>100</td>
<td>25%</td>
</tr>
<tr>
<td>Project 3</td>
<td>100</td>
<td>30%</td>
</tr>
<tr>
<td>Attendance</td>
<td>30</td>
<td>5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXERCISES</th>
<th>TOTAL POSSIBLE POINTS</th>
<th>COURSE VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 exercise(s)</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>P2 exercise(s)</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>P3 exercise(s)</td>
<td>10</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Project Resubmission**

During the course, students may resubmit one project to attempt a higher grade by the last day of classes. Resubmissions will not be accepted if the project was not presented or completed at the final critique. If a student chooses to resubmit a project, they must discuss with the professor the revisions they intend to make. Students must resubmit and add a new section to their process book called “Resubmission” and document all resubmitted work. Students must resubmit original work along with grade sheet. Project resubmission will not necessarily ensure a higher grade.

**Project Evaluation Criteria**

Project evaluation comprises the following areas of criteria totaling 100% of each assignment's grade. You are evaluated using the criteria specified in this document. This allows the ability to clearly and accurately pinpoint the strengths and weaknesses of your performance. The criteria are divided into three major categories: process, realization, and professionalism. These categories are defined as follows:

**Process**

Research

Are the research methods effectively chosen and implemented to arrive at successful solutions to design problems? Do they cover all aspects of the problem, including, but not limited to, historical background and functional concerns?
Concept
Are concepts inventive and appropriate, and do they satisfy the objectives of a stated visual problem?

Motivation
Did the student stay on task and motivated throughout the entire process?

Communication
Does the problem solution present a clear message, and is this message appropriate for the audience?

Organization

Realization
Craft
Does the project reflect the appropriate use of tools and materials, and is it presented in a professional manner?

Synthesis of Critical Feedback
Did the student engage in synthesizing critical feedback and personal assessment into refined work?

Visual Articulation
When required, did the student clearly and accurately represent in a manner that was convincing and professional? Was the audience effectively considered?

Professionalism
Attendance
Was the student punctual, and exhibit a responsible attitude?

Deadlines
Was the process work prepared and were projects turned in on time?

Verbal Articulation
Was the student able to critically address his/her work clearly, concisely, and accurately? When required, did the student clearly, concisely, and accurately verbally articulate pertinent data in a convincing and professional manner? Was the audience effectively considered in the choice of language used to deliver the data?

General Grading Criteria
Grade A – An Outstanding Student
• Demonstrates leadership abilities in the following areas: process, realization and professionalism
• Demonstrates mastery of design process
• Exceeds required number of solutions for stated problem continually
• Exhibits outstanding technical and conceptual abilities consistently
• Respects, yet creatively challenges and pushes the boundaries, of all assignments consistently
• Engages in classroom discourse by thinking beyond the parameters of the
assignment
• Takes initiative continuously
• Maintains perfect or near perfect attendance
• Exceeds course goals and objectives continually

Grade B – An Above Average Student
• Engages in the design process
• Exceeds the required number of solutions for a stated problem
• Exceeds the requirements of assignments both technically and conceptually
• Engages in classroom discourse by thinking beyond the parameters of the assignment
• Takes initiative
• Maintains perfect or near perfect attendance
• Exceeds course goals and objectives

Grade C – An Average Student
• Engages in the design process
• Produces the required number of solutions for a stated problem
• Meets the requirements of assignments both technically and conceptually
• Participates in classroom discourse (critique: verbal and written articulation)
• Meets attendance requirements
• Meets course goals and objectives

Grade D – A Below Average Student
• Shows no particular level of commitment
• Does not follow the design process
• Produces less than the required number of solutions for a stated problem
• Lacks enthusiasm
• May or may not meet the requirements of assignments both technically and conceptually
• Rarely participates in classroom discourse (critique: verbal and written articulation)
• May or may not meet attendance requirements
• Does not meet all course goals and objectives

Grade F – An Unsatisfactory Student
• Shows no level of commitment
• Does not follow the design process nor demonstrate an understanding of its application
• Does not produce the required number of solutions
• Lacks enthusiasm, motivation and an ability to work independently
• Does not meet the requirements of assignments both technically and conceptually
• Does not participate in classroom discourse (critique: verbal and written articulation)
• Does not meet attendance requirements
• Lacks initiative in taking responsibility for their education
• Does not meet all course goals and objectives
\[
\begin{array}{lcl}
A & = & 94-100 \\
A- & = & 90-93 \\
B+ & = & 86-89 \\
B & = & 83-85 \\
B- & = & 80-82 \\
C+ & = & 76-79 \\
C & = & 73-75 \\
C- & = & 70-72 \\
D+ & = & 66-69 \\
D & = & 63-65 \\
D- & = & 60-62 \\
F & = & < 60 \\
\end{array}
\]

**Plagiarism Policy**

It is expected that all work will be students' own original creation (or creations in acknowledged collaboration) in accordance with the specifications communicated in project briefs. Plagiarism is the use of others' words, images or ideas without clearly acknowledging the source of the information. Common instances of plagiarism include—but are not limited to—the use of others words (directly or in paraphrase) without citation or with incorrect citation, submitting work that is not the student's own original effort, submitting the same work for multiple courses without prior consent (self-plagiarism), or using images that are not original without proper acknowledgment/attribution.

Students are expected to do research and view examples of art and design work as part of the learning process and as inspiration. However, it is crucial to distinguish design solutions which are merely “inspired” by other examples, and those which copy from examples. The easiest way to avoid plagiarism is to avoid relying on internet image searches, particularly at the beginning of your design process. The required design process (working through sketches through revisions towards final design solutions) helps to weed out work that relies too heavily on others' designs.

If a student has been identified as having committed plagiarism, the student will receive a zero for the project in which the plagiarism has occurred. Depending upon the circumstances and severity of the offense, additional disciplinary measures may be taken. See the UWM Academic Misconduct Policy: [https://uwm.edu/deanofstudents/conduct/conduct_procedures/academic-misconduct/](https://uwm.edu/deanofstudents/conduct/conduct_procedures/academic-misconduct/)

**UWM Statement Regarding Copyright:**

*What is copyright?*

Copyright is a form of protection provided by the laws of the United States (title 17, U.S. Code) to the authors of “original works of authorship,” including literary, dramatic, musical, artistic, and certain other intellectual works. This protection is available to both published and unpublished works. Section 106 of the 1976 Copyright Act generally gives the owner of copyright the exclusive right to do and to authorize others to use their materials. You must get permission to use copyrighted original works of authorship if you plan to make your project available to the public in any way. For more on gaining permission see: [http://www4.uwm.edu/ltc/copyright/getting-permission.cfm](http://www4.uwm.edu/ltc/copyright/getting-permission.cfm)
Final exam time will be posted on your D2L site **Monday, May 13th 5PM-7PM**

Resubmission, work return and cleanup will be held during the official University final exam time schedule.

**University Policies**

Please see supplemental PDF document on the course D2L site with live links to University Policies.

https://uwm.edu/secu/syllabus-links/

**Health Insurance**

It is strongly recommended that all students have health insurance that includes emergency room and hospitalization coverage. The UWM Student Association offers a Student Health Insurance Plan which covers most major medical illnesses or injuries. The University does not provide blanket medical coverage to students. Students are strongly encouraged to secure their own health insurance, either through their parents, the Student Health Insurance Plan or some other program.

**Students with disabilities.**

Students with a documented disability that requires course accommodations, must provide either a VISA or the new electronic accommodation letter from the Accessibility Resource Center. There are no exceptions - this is a University policy. Students are encouraged to get accommodations when they are needed; instructors cannot make accommodations without official documents from the ARC.

https://uwm.edu/arc/

**Religious observances.**

http://www4.uwm.edu/secu/docs/other/S1.5.htm

**Discriminatory conduct** (such as sexual harassment). Discriminatory conduct will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the careers, educational experience, and well-being of students, faculty, and staff.

http://www4.uwm.edu/secu/docs/other/S47.pdf

**Complaint procedures.**

If a complaint cannot be resolved between instructor and student, the student may direct complaints to the head of the department, Yevgeniya Kaganovich. If the complaint allegedly violates a specific university policy, it may be directed to the head of the department or academic unit in which the complaint occurred or to the appropriate university office responsible for enforcing the policy.

http://www4.uwm.edu/secu/docs/other/S49.7.htm

**Grade appeal procedures.**

A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the course instructor. Such an appeal shall follow the established procedures of Peck School of the Arts. These procedures are available in writing from the Art and Design department chairperson, Yevgeniya Kaganovich, or Dean of Peck School of the Arts.

http://www4.uwm.edu/secu/docs/other/S28.htm