



BBCTA-B202-IED

## ***Introduction to Engineering Design (IED)***

Mr. Bankston • [donbankston@misdmail.org](mailto:donbankston@misdmail.org)

Ben Barber Innovation Academy • B202

## Syllabus

- **2019 Fall IED** meets every other day from 7:00 – 10:00 a.m. or 11:30 – 2:30 p.m. Monday-Friday during August 14 to December 18, 2019 (every other school day).

This syllabus will provide you with the basic information about the course. You **MUST** keep it for future reference in your portfolio, after your parents read it and signed it. It is also available on **Google Classroom**.

### WELCOME

I am very happy to have you in this accelerated **Introduction to Engineering Design** course at Ben Barber Innovation Academy during these next 18 weeks. It's has weighted credit like an AP class. I say it is accelerated, because here at Ben Barber we complete a whole year course in a semester's time. So things happen faster in this class. **This class has a high homework level each class period.**

### WELCOME TO PROJECT LEAD THE WAY!

Project Lead the Way (PLTW) is a four year sequence of courses which, when combined with traditional mathematics and science courses in high school, introduces students to the scope, rigor and discipline of engineering prior to entering college. However, those not intending to pursue further formal education will benefit greatly from the knowledge and logical thought processes that result from taking some or all of the courses provided in the curriculum. This is the order PLTW Engineering courses should be taken and the recommended grade levels: Introduction to Engineering Design 9th, Principles of Engineering 10th, either (Computer Integrated manufacturing 10th / 11th or Aerospace Engineering 11th), and Engineering Design & Development 12th. PLTW engineering courses will help prepare YOU for college, other higher education after high school, and life.

### COURSE DESCRIPTION & OBJECTIVES

The major focus of the course is learning how to take an idea through a design process that will eventually be manufactured or produced. As you learn about various aspects of engineering and engineering design, such as how engineers communicate through drawing, you will apply what you learn through various activities, projects, and problems. For example, after learning about the different techniques engineers use in determining how to design a product, you and your teacher will have the flexibility to explore the design and engineering processes to solve problems that are of interest to you. The course covers the following:

The Role of an Engineer

- The Design Process
- Product Design
- Product Analysis and Improvement
- Designing as an Engineer

In addition, you will use Inventor, which is a state of the art 3-D design software package from AutoDesk, to help you design solutions to different design projects. Working in teams, you will learn about documenting your solutions, solving problems, and communicating your solutions to other students and members of the professional community of engineering and engineering design.

**Introduction to Engineering Design™** is intended to serve as a foundation course within the Project Lead The Way® course sequence. **All of the topics learned in this course will be used in future courses.**

**Credit: 1 elective.**

## TEACHER INFORMATION

A major key to thriving students is teacher/student/parent/family communication. I want all of my students be successful in this class, preparing them for life after high school by encouraging them to listen, solve problems, and strive for excellence. With parental/family help by providing encouragement and support at home, each student can be encouraged to achieve his or her maximum potential. Please feel free to email Mr. Bankston at [donbankston@misdmail.org](mailto:donbankston@misdmail.org) or call and leave a message, if you or your parents have any questions. Mr. Bankston is available on request to schedule a conference at Ben Barber INNOVATION Academy BBIA: 10:05-10:45 a.m. Monday to Friday. The School phone number is 682-314-1600.

## ASSIGNMENTS

- ⑥ Pen (MUST use and bring daily, black or blue ink pen). Also bring daily and a highlighter to class.
- ⑥ You must MUST bring two Pencils daily (1-mechanical and 1-wood #2)
- ⑥ Assigned PC also must use (Google Classroom and Dropbox accounts here and at home).

## SOFTWARE

We will be using 3-D modeling software called **Autodesk Inventor 2018**. The software can be downloaded for free From Autodesk Student website. This 3-D modeling software is installed on the B202 Lab student-assigned computers. The software is **not** available for Mac users.

<http://www.autodesk.com/education/free-software/inventor-professional>

**All course assignments will be accessible on GoogleClassrom.com**

## CURRICULUM UNITS

Unit 1 - Design Process

Unit 2 - Technical Sketching and Drawing

Unit 3 - Measurement and Statistics

Unit 4 – Modeling Skills

Unit 5 – Geometry of Design

Unit 6 – Reverse Engineering

Unit 7 – Documentation

Unit 8 – Advanced Computer Modeling

Unit 9 – Design Team

Unit 10 – Design Challenge

**ASSESSMENT POLICY**—One (1) day=four (4) days of course work. 1-Six weeks = 2 six weeks of work.

**According to District Policy**, a course's grading periods (all 3) will be averaged together for **80%** of the overall grade.

⑥ Major Project/Tests / Quizzes .....	40%
⑥ Daily /Classwork / Eng. Notebook .....	60%

**NOTE:** The final exam online from PLTW will represent **20%** of course grade.

## College Credit and End of Course Exams (Final Exam)

An overall grade of 85% in this course along with a completed student portfolio will determine each student's eligibility to take the end of course exam for college credit. For more information about college credit, visit PLTW.org. The grade earned for college credit will be the grade earned solely on the end of course exam. **You will review for this exam by using your engineering notebook that you create.**

**All students in our PLTW engineering program of study are required to complete an end of course test. This will occur on or before the regular district final exam schedule. All students will take this test and it will serve as their final exam grade for the course. *Notice you cannot be exempt from this Final Exam (no exceptions). So use your exemptions for your other classes.***

## CAMPUS & CLASSROOM ENVIRONMENT

Our campuses and classrooms provide amazing resources that must be shared. Both you and I will abide by these policies as well as those established by the Mansfield ISD school board policies:

- **Be respectful of one self** – Come to class prepared with your materials and assignments; be dressed and groomed in accordance to school codes.
- **Be respectful others** – The focus of the class is on learning. Distracting behavior will not be acceptable.
- **Be respectful of property and equipment** – Clean up after yourself and take care of items that are placed in your care. Put things back where and in the way you found them.
- **Be responsible** – Take care of your assignments and other business at appropriate times.
- **Be reliable** – Be prepared and on time for class.
- **Be a team player** – You will have plenty of opportunities to team up with and/or help others in the class. Do the work and on time, carry your part of the load, and do it with a good attitude and with your heart. Winners never give up, just keep trying and working and it will come.

We are here to become more powerful people: to become leaders that make our communities better. Respect plays out in many ways, including paying attention, doing quality work, being ready to learn and participate and supporting each other. Here is where we can hone our individual and team skills. This is your opportunity to act in the intention of helping each other grow. Give your best effort. Do quality work and let's inspire each other to greater heights of personal satisfaction and achievement.

## B202 • CLASSROOM EXPECTATIONS

1. **SIGN IN** at table by the door. This is how attendance is taken. It is your responsibility.
2. **Students are to be seated at the tables** when the bell rings and ready to start.
3. **ASSIGNED SEATS** – students must sit at their table and assigned computers and are not allowed to use other computers unless specifically directed to by the instructor.
4. **Backpacks, purses and other large items** must be in the assigned area (tables only not the computer area) for each student. This includes iPads, cellphones, and all electronic devices kept in backpack.
5. **Class participation** – Students are expected to actively participate in class daily. Passive learners don't learn much, you need to be actively involved in this class. This will show in your daily work (assignments) and also on Test and Quizzes.
6. **Missed Work/Assignments and Test** – It is your job to look on **Google Classroom** before you come back from missing this class, **before you come back to class**. That way you will know what you missed and many times can go ahead and do the work or at least start it. Please ask the teacher for anything you don't understand about the missed work/assignment when you return to class. **Keep in mind you are expected to already know what you missed. Must be completed ASAP.**
7. **Lab Safety / Health** – Students are expected to follow classroom rules, listen to and follow instructions (written and/or verbal), and use common sense when working in this class. More detailed information will follow as necessary.
8. **Out of respect** for our learning environment, **YOU MUST** silence your phone before you enter the class and place all electronic devices in your back pack, including iPad, phone, all ear buds (headphones) before entering. No electronics should ever be seen or heard by the teacher in this class. During lecture and class discussions this is important to maintain necessary focus. BYOD Policy – Mansfield ISD has a BYOD policy in place; however, with access to computers in the classroom daily, **the use of cellular device is never allowed in**

**Class.** Having cell phones out in class (bell to entry classroom to the dismissal bell) will result in a disciplinary office referral. This includes the time for cleanup, just keep your phones put away until dismissed by the teacher.

- **iPad Classroom Rules**

- Make sure ear buds and headphones are put away and out of sight before entering the classroom.
- Put your iPad in your back pack before entering the classroom including all electronics.
- Make sure ear buds and headphones are put away and out of sight in your back pack before entering the classroom.
- Make sure the sound is off before entering the classroom and put away in back pack.
- iPads need to remain in your back packs. Never take iPads to the computer area. You will not use them in this classroom, so you will need to have in your backpack.

9. **Computers are to be left in the same configuration as found** (including screen background, etc.). Remember these are not your personal computers. A record is kept of your technology usages by way of Net Support and it records all activities on the computers.
10. **Outside storage** devices are not to be used in the B202 Computer Lab without the permission of teacher. Please don't bring memory sticks to class or ever put them into the computers.
11. **No food is allowed** in the computer lab. Only drinks with a screw cap is allowed at the tables.
12. **Printing** – Some assignments may be printed to a central network printer. Students should proof read work before printing. Any printing of items not pertaining to this class requires specific permission from the instructor.
13. **Worksheets** – Students will be given ONLY one copy of each worksheet and/or instruction sheet needed. The work is listed on **Google Classroom** for the schedule of the work and when the work is due. If the student loses the worksheet and/or instruction sheet, it is expected that the student reprints as needed whatever was lost, from Google Classroom on their own printer.

## ABSENCES & TARDIES

All assignments will be accessible electronically on GoogleClassroom.com. It is your responsibility to get any information missed if absent on **Google Classroom** for this class. Because this course is condensed to three six weeks, all work will have a maximum late submission date which is the 10th class period late or before the six weeks has ended, whichever comes first. It is up to the student to get missed work completed on a timely bases. Tardies: Students need to figure out how to get to class on time. The district's policy is on the 4<sup>th</sup> tardy and every tardy after students will receive an office referral. BTW I follow this policy.

## LATE WORK

- Teacher designates due date and time for assignment (Beginning of class period, End of class period, designated time of day)
- If student fails to meet the due date and time, then the student has till the next class period (next A day or B day) to turn in assignment to be considered one day late.
- Students will be assessed a penalty of **30% points** for up to one class period late.
- Score of a **zero may be given** for work turned in after one day late.

It is important that you communicate any special circumstances regarding absences and late work to Mr. Bankston ASAP.

## Re-take Policy

- Students who fail a major test/assessment (below 70%) will be allowed to retake or correct up to a 70% grade. This does not include semester examinations.
- Students are expected to make arrangements with the teacher to retake or correct a major test/assessment.
- Students are encouraged to participate in tutoring opportunities before retaking a test.
- Each teacher will communicate routine requirements for retakes and corrections in his/her course syllabus.
- All retakes or corrections must be completed prior to the end of each six week grading period unless the student is afforded time, after the six week grading period, as a result of the district's absent/make-up guidelines.

## Dropbox and Google Classroom Due: A-day August 20<sup>th</sup> & B-day 21<sup>st</sup>

(Dropbox-Both school & home installed) and Google Classroom (Both school & home signed in).

All Students must have an active Dropbox account setup and save all files for this class in that account. It is free at dropbox.com. Students need to install Dropbox and also join my class on Google Classroom with **class code hgd5m6**, so they can open their files and do their work on the school computers in class and on their iPads and/or their own PC's as needed, at home. All students will need to setup and installed both Dropbox & Google Classroom on a classroom assigned computer and their home computer, by the due date of **A-day by August 20, 2019 and B-day by August 21, 2019**. This is to help you here in class and also at home, especially if you ever miss a class or get behind on your work.

**Please share your Google Classroom sign in information with your parent(s) so they can also see the lesson plans for the class.**

## When You Are Absent or Have Missing Assignments

**It is your responsibility to let me know that you are in need of help.** You must check and use Google Classroom, **Google Classroom** (for Lesson Plans and files needed) and Dropbox to get caught up on any and all work you missed or are behind on. If you need help let me know otherwise you will need to make up the work on your own. Please keep in mind, we only meet around 40 times (counting final exam) this semester and this counts, as a whole school year course. We meet 3 hours each time we meet. **When you miss you will get very behind on your work. It is your job to get the missing work done ASAP.** Please don't miss if there is any way you can help it, because you are still responsible for the missed work and it is on you to get it done.

## MAKEUP WORK (because of absence for any class missed)

- The teacher may assign the student makeup work based on the instructional objectives for the subject or course and the needs of the individual student in mastering the essential knowledge and skills or in meeting subject or course requirements.
- A student will be responsible for obtaining and completing the makeup work in a satisfactory manner and within the time specified by the teacher. When absent, the student is afforded the number of days missed plus one additional day to turn in makeup work. [A/B Block Example: A student misses Monday and Tuesday of the week and he/she returns on Wednesday of that same week. Student work from Monday's absence is considered late after Friday, and student work from Tuesday's absent is considered late after the following Monday.]
- A student who does not make up assigned work within the time allotted by the teacher will receive a grade of zero for the assignment.
- A student is encouraged to speak with his/her teacher if the student knows of an absence ahead of time, including absences for extracurricular activities, so that the teacher and student may plan any work that can be completed before or shortly after the absence.

- A student will be permitted to make up tests and turn in projects due in any class missed because of absence. Teachers may assign a late penalty to any long-term project in accordance with time lines approved by the principal and previously communicated to students.
- See UIL Eligibility ("No Pass/No Play") guidelines for additional information related to grades and UIL Eligibility.

**Posting Student Work** – Student grades will be posted in Skyward parent portal within five business days for daily grades and major grades. Special consideration is given to major projects, including lengthy assignments.

**Extra Credit** – I offer extra credit on key terms, before the assigned quiz / test over the material.

## TUTORING

**It is your responsibility to let me know that you are in need of help.** It is very important to not fall behind. Tutorial times are limited. I will be here before school about 6:20 am. Please plan on being here by then if you need additional help. The building does not open until 6:30 am (Monday – Friday), so someone will have to let you in the building. It's best to come up to the back door in the commons area near where the students park. I will not be there but in my classroom. I will stay after school up to 3:00 pm (Monday – Friday) so you can get help and/or work on your missing assignments. You must arrange your own ride home in advance if you stay after school. Have them pick you up at 3:00 pm.

## Materials to be Purchased by Parent / Student

A 1 1/2" inch (or a 1", but it may not big enough for all papers to fit) three ring binder with pockets in the covers. Must be a binder with a hard front & back cover. This portfolio needs to be new or in like new shape. **Do not** mark the outside cover, front or back. Please print on the inside of the front cover your name with a Sharpie or ink pen.

1 package of Divider Pages. / 1-mechanical pencil (inexpensive) 1-regular wood number 2 pencil.

2 rolls of transparent tape 1/2" wide and also 1- **highlighter** to highlight titles in engineering N.B.

**The above materials are due by: A-day by A-day August 22nd & B-day 23rd.**

**Teacher Provided: NEW** Composition Book Graph Ruled 9 3/4" X 7 1/2" (**SPIRAL NOTEBOOKS ARE NOT ACCEPTABLE**). **You mess it up or loss it....you will need to buy a new one same size, etc...**

**Calculator** – scientific with "sin, cos, tan" minimum OR a graphing calculator. Bring to class if you have one, **don't buy one for this class if you don't already have one.**

\*\*\*Please label all of your property with first and last name and class period\*\*\*

**DISTRICT POLICIES** – The student and parent must sign the computer rules policy provided by the Mansfield ISD. All district and campus policies will be followed and enforced in this classroom. MISD and BBCTA/FHS policy will be followed in relationship to cell phones and electronic devices in the classroom.

## Certifications

There are no certifications offered with this course.

## ID Cards (All MISD High Schools)

Mansfield ISD high school students are required to purchase current identification cards. (Cost is \$5.00 per ID.) Students **MUST** wear the current ID at all times while on campus and while attending any school-related activity/function. \* The ID **MUST** be visible and worn on the front of the student's torso



between the shoulder blades and the natural waist line. ID lanyards and/or clips are provided for a fee to students on each campus. Students out of compliance are subject to discipline consequences. These consequences may include sending the student home or to AC until student complies with the ID policy. Persistent non-compliance with the ID policy by students will result in additional consequences. ("Persistent" = two or more offenses per year.) Any student who fails to properly identify him/herself and/or flees from a Mansfield ISD high school staff member may be placed in an alternative placement. Replacement cards cost \$5.00.

\*Specific services/functions that will be denied include but are not limited to: Saturday School; Detention Hall; computer (classroom) or computer lab usage; academic recovery programs; library; access to the bookkeeper, counselors and associate principals; access to resources in the counseling center and attendance office; hall passes; TEA forms; lunch cards; phone privileges in offices; and parking stickers.

### ACADEMIC HONESTY & INTEGRITY

Honesty is always the best policy. Please, give me NO reason to suspect any form of cheating on work that is done in this course. While *working* with others on projects and assignments are allowed & encouraged, copying all or any part of any assignment is cheating and will result in a zero for the assignment, parent contact, and a referral to your assistant principal (per Student Code of Conduct).

**KNOW THIS . . .** You will be challenged each day to live your life with a purpose . . . so regularly ask yourself, "Do I know that my choices are affecting ME either positively or negatively and WHO I am becoming and who I will be in the future?"

**THIS IS YOUR LIFE . . .** Your one-and-only life on this planet. You determine what's possible. Make good choices, ask questions, think, and take positive steps – today is the day. Each day life offers itself to us in an endless number of ways. Each moment comes to us with both hands filled with gifts, marvels, opportunities and adventures – but we seldom see or accept more than a tiny fraction of the exciting possibilities around us. Let's be daring, be bold and be true to ourselves. Let's make the most of these opportunities to work together and to learn from each other.

**All course assignments will be accessible on [GoogleClassroom.com](https://classroom.google.com/)**



Room B202

**Mr. Bankston**

Information Technology & Engineering Instructor  
BEN BARBER INNOVATION ACADEMY • MANSFIELD, TEXAS  
[donBankston@msdmail.org](mailto:donBankston@msdmail.org)

Updated 08/05/19

## STUDENT & PARENT SIGNATURE PAGE Fall 2019

### IED – D. Bankston, Engineering Instructor

*Due: A-day August 20th & B-day 21st Signed by both.*

Please sign and return this packet after reviewing the Course Syllabus, Classroom Policies and the Mansfield ISD Acceptable Use Policy (AUP).

My child and I understand that he/she must comply with these regulations. We realize that if he/she fails to abide by the rules, he/she will adhere to the sanctions listed and will not be able to participate in this computer-based lab or regular classroom.

District policy states that every student will **wear** an ID and have a **signed Acceptable Use Policy (AUP)** on file every day to be able to access any MISD networked computer.

Your signatures below indicate that you have received, reviewed, and accept the course syllabus, classroom policies and the Acceptable Use Policy (AUP) of the Mansfield ISD.

Student's Name: (Print) \_\_\_\_\_

Write your Grade Classification right now, in the blank: (9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> or 12<sup>th</sup>) \_\_\_\_\_

Student's Signature \_\_\_\_\_ Date: \_\_\_\_\_

Parent's/Guardian's Name: (Print) \_\_\_\_\_

Parent's/Guardian's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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**P.S. All course assignments will be accessible on GoogleClassroom.com**

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**(Dropbox-Both school & home installed) and Google Classroom (Both school & home signed in).**

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**Mr. Bankston**

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