1. **Course Number and Name**

    ENES 101 – Introduction to Engineering

2. **Credits and Contact Hours**

    3 units, 2 hours of lecture, 2 hours of discussion

3. **Instructor or Course Coordinator Name**

    Fall 2019 Instructors:

    Dr. Chuck LaBerge
        ITE 325M; Phone: (410) 455-5684
        E-mail: chuck.laberge@umbc.edu
        Office Hours: see schedule in Contacts on Blackboard

    Dr. Chris Hennigan
        TRC 253; Phone: (410) 455-3515
        E-mail: hennigan@umbc.edu
        Office Hours: see schedule in Contacts on Blackboard

    Prof. Jamie Gurganus "Prof. G."
        ENGR 225J; Phone: (410) 455-8439
        E-mail: jgurganus@umbc.edu
        Office Hours: will be posted on Blackboard.

    Teaching Fellows
    See Contacts page on Blackboard for contact and office hour information.

4. **Textbook and Material**

    For Academic Year 2019-2020, we're teaching ENES101 without a stated textbook. The texts we have used in past semesters seem to have a lot of material that we never cover, and cost too much as a result. You *will* want to print and save the lecture slides. Many students either bring their laptop/tablet to class and take notes directly on the posted slides, or print the slides and take notes on the paper copies. Do not, however, assume that since there's no text, there's nothing to learn in this class. No textbook means that lectures become more important! Please attend.

    We do, however have an electronic textbook/workbook for MATLAB. MATLAB is applicable to *all* engineering disciplines. CBEE and ENME majors who believe that no programming will be required in their major are wrong. MATLAB skills are universally applicable, and MATLAB itself is almost universally available in academic, industry, and government jobs. You *will need MATLAB skills*! Directions for downloading MATLAB may be found at

https://wiki.umbc.edu/display/faq/Matlab+Stand-Alone+Installation .

Once you download MATLAB (you will need your UMBC ID and e-mail address) please take advantage of the multiple tutorials available at mathworks.com (MathWorks published MATLAB). Alternatively, you can search YouTube for various MATLAB advice and "how to" videos. If you are new to MATLAB, or seem like you can't do without a text book, we recommend R. Pratap, *Getting Started With MATLAB: A Quick Introduction for Scientists and Engineers.* New York: Oxford University Press, 2010. You can find it at Amazon or Barnes and Noble on line.

To access zyBooks:
1. Sign in or create an account at learn.zybooks.com
2. Enter zyBook code: UMBCENES101Fall2019
3. Subscribe. The cost is $77, but this is the only textbook you need for ENES101

It is also possible to purchase an access card at the UMBC Bookstore. The access card will have its own instructions.

It is also possible to purchase access to zyBooks through the UMBC Bookstore. In that case, follow the directions on the card you receive with your purchase.

Instructions for downloading MATLAB and accessing zyBooks are also posted on the ENES101 Blackboard page.

5. Specific Course Information

a: Brief Description
Introduction to engineering that covers "thinking like an engineer"; including professional practice and basic engineering ethics, data analysis and curve fitting, estimation, engineering units and dimensional analysis, and the engineering design process. Students must work in teams on a design project, which includes design, construction, evaluation, testing, modeling and presentation. Course includes an introduction to computer programming in MATLAB.

b: Prerequisites: MATH150 is a prerequisite, MATH151 (Calculus I) is a corequisite.

c. Required/Elective/Selected Elective

Required course for all engineering majors (CBEE, CMPE, ENME).

6. Course Outcomes

1   Students experience the product design and development process.
2   Students learn to operate in a team environment.
3   Students have practiced and developed skills in oral presentation.
4   Students master working with engineering units, converting between different units, and performing dimensional analysis.
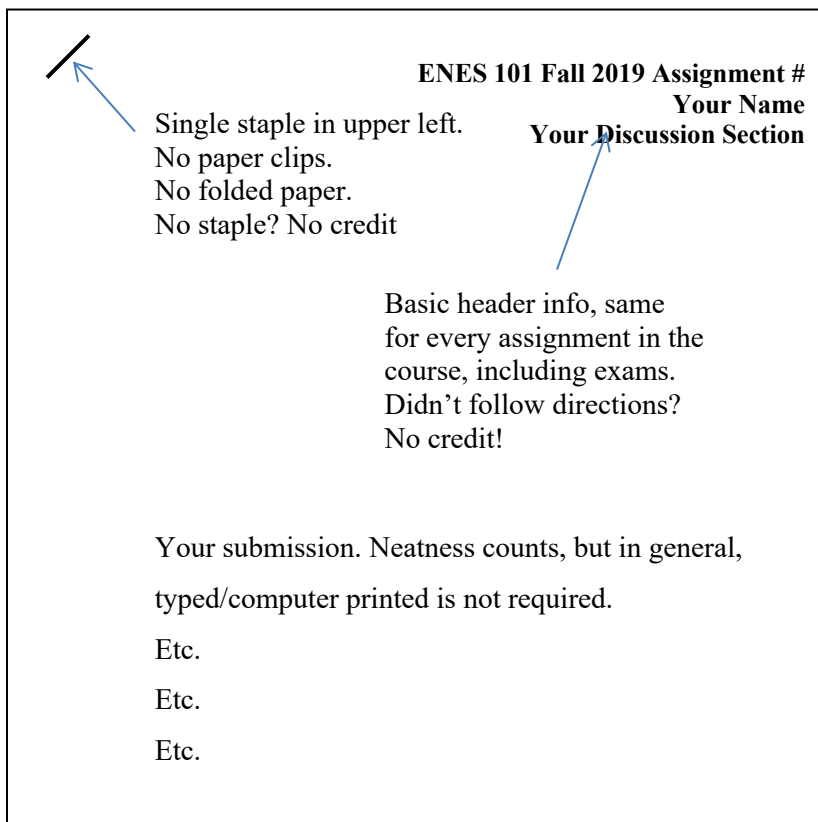
5   Students have developed basic skills in MATLAB.
6   Students have an awareness of professional engineering practice and workplace ethics.

7. Brief List of Topics to be Covered

Engineering careers	Units and Dimensions	MATLAB (most Mondays!)
UROS Project	Teamwork	Engineering Ethics
Energy fundamentals	Statistics	The Design Process
Ambiguity and estimation	Technical presentations	

8. Class Policies

Homework: To develop skills, you need practice! Therefore, *all* homework problems should be worked; working these homework problems is considered to be an integral part of the course. The homework problems, including MATLAB assignments, will be assigned almost every week and will be collected at the beginning of the discussion session of the following week. Late assignments will NOT be accepted. If you cannot attend class, your work should be submitted by a friend or given to your Teaching Fellow PRIOR to class. All work should be neatly organized and legible. *At a minimum*, the homework submission should comply with the following format:

ENES 101 Fall 2019 Assignment #
Your Name
Your Discussion Section

Single staple in upper left.
No paper clips.
No folded paper.
No staple? No credit

Basic header info, same
for every assignment in the
course, including exams.
Didn't follow directions?
No credit!

Your submission. Neatness counts, but in general,

typed/computer printed is not required.

Etc.

Etc.

Etc.

Discussion: Attendance, punctuality and full participation in the discussion sessions is *required* for this course. Attendance is mandatory for the design project demonstration and design project presentation. Allowance will be made for religious observations. Please notify Dr. LaBerge, Dr. Hennigan or Prof. G in advance.

Attendance: This course is your first experience in the professional practice of engineering. In professional practice you are *expected to be at work, on time*, *every* day. Most engineering firms provide a sick leave policy of 10 days or so each year. This time is available if you really need it, but it is *not personal leave or vacation time*! For this class your "sick leave" allocation is three discussion sections.

> **Missing more than three (3) discussion sessions will result in *failing* ENES101. There is virtually no chance that an appeal to Dr. LaBerge, Dr. Hennigan or Prof. G. will be approved. Every semester, a few students fail *solely* on the basis of attendance. Don't let it be you!**

In the professional practice of engineering, the equivalent of missing three of our discussion sections would be excessive absenteeism on the job. The penalty is simple: you lose your job! The equivalent here is you fail the course, which is actually *less* penalty than the real job because you can retake the course, but you are unlikely to be rehired once terminated for absenteeism.

Be on time! Don't miss classes, especially discussion sections. **Arriving more than 30 minutes late to discussion is counted as an absence. Arriving between 5 – 30 minutes late to discussion is counted as a tardy. Two late arrivals will be counted as an absence.**

We do, of course make exceptions for religious obligations. Please notify Prof G., Dr. Hennigan or Dr. LaBerge and your Teaching Fellow in advance.

9. **Grading and Assignments**

Student grades are based on both individual and team assessments, with a relative weighting for each assignment/assessment as shown below:

Grading
Using the weighting discussed below, the sum of the weighted scores will be used to determine the course grade. The following grade standards will be enforced:

Weighted sum ≥ 90 = A
$90 >$ Weighted sum ≥ 80 = B
$80 >$ Weighted sum ≥ 70 = C
$70 >$ Weighted sum ≥ 60 = D
Weighted sum ≤ 60 = F

Grades are *earned*, not *given* or assigned. The statement "you gave me a 'C'" has no meaning.

Students who achieve the posted standards given above are assured of earning the indicated grades. In the interest of fairness, the instructors reserve the right to implement minor easing of these requirements based on actual class performance in any given semester. The requirements will *not* be made more stringent. Students are cautioned that such easing is *solely* at the discretion of the instructors and may or may not occur in any given semester. You should *not* count on any easing of the thresholds indicated here. If you want a "B", score 80 points or more, if you want an "A", earn more than 90 points. Because any such easing is at the sole discretion of the instructors, the amount of such easing will not be disclosed to the class as a whole or to affected students individually.

> **If you come to us with an 89.5, *do not expect* that we will round up to a 90, resulting in an "A" grade. The standard for an "A" is 90.00. Know the standards and achieve those standards.**

For Fall 2019, the assignment weighting will be as shown in Table 1. Note that this assignment weight basically gives everyone a chance for *3.7 extra credit points*, plus the ability to drop a single quiz and a single homework. If you desire, you may count all the Quiz/Homework as extra credit points.

All team scores will be weighted by *multiplying* by the average Teamwork score earned through the CATME assessment process. This means that your grade will be heavily influenced by how much you contribute to your team.

No other extra credit considerations will be offered this semester. None! At all! Don't ask!

"24/7" Grading Policy: For each graded item in the course, students must wait at least 24 hours after the graded item is returned to request a review of the grading. All such requests must be made within 7 days of when the graded assignment or test is handed back. After 7 days, all scores become <u>final</u>.

The spreadsheet shown in **Table 2** provides a representative example of how weighted scoring works, using the weighting given above. This is *exactly* how scores and grades will be computed. In this example, the student's weighted score is greater than or equal to 80, and less than 90. Therefore, the grade is a "B". Note the severe penalty paid by a 9.2/10 in teamwork. You should work the example with a 10/10 in teamwork and see the difference in the overall grade.

Table 1 - ENES 101 Assignment Weighting for Fall 2019

ENES 101 Fall 2019 Scoring		
Individual Assessment		
	Quiz total (drop lowest)	5%
	Aggregate HW (drop lowest)	10%
	zyBooks	10%
	Mid-term Exam	10%
	Final Exam	20%
	MATLAB project	5%
	Individual Presentation	2%
	Submit team contract	1%
	Submit CATME responses	2%
	Teamwork Assessment	5%
	Extra Credit (0.0 to 2.0)	2%
	INDIVIDUAL TOTAL	72%
	Teamwork Assessment	
	ISR Weight from above (0.8 to 1.05)	1.00
	Unweighted Teamwork	
	Teamwork exercise	3%
	UROS Raw Score	10%
	UROS Cost Effectiveness	10%
	UROS Presentation	5%
	Submit Video	2%
	UNWEIGHTED TEAM TOTAL	30%
	[†]**TOTAL POINTS AVAILABLE**	102%

[†]Total points available is actually higher since the ISR weight goes up to 1.05

Hint: Use Microsoft Excel or an equivalent spreadsheet program to build this spreadsheet with automated computations. Use your spreadsheet throughout the semester to keep yourself up-to-date on your current and projected grade in the course!

Scoring for the team-based activities will be based on the given score range. Additional details on exactly how the UROS team-based activities are scored will be given in a separate file posted on Blackboard in the Syllabus folder.

Table 2 – Sample Grade Computation with Teamwork assessment of 9.2/10

INDIVIDUAL ASSESSMENT (max = 72%)		Score	Max	Raw	Contribution
Quiz total (drop lowest)	5%	96	110	0.873	4.36%
Aggregate HW (drop lowest)	10%	90	110	0.818	8.18%
zyBooks	10%	90	100	0.9	9.00%
Mid-term Exam	10%	85	100	0.85	8.50%
Final Exam	20%	88	100	0.88	17.60%
MATLAB project	5%	95	100	0.95	4.75%
Individual Presentation	2%	4	5	0.8	1.60%
Submit team contract	1%	1	1	1	1.00%
Submit CATME responses	2%	3	3	1	2.00%
Teamwork Assessment	5%	4.6	5	0.92	4.60%
Extra Credit (0.0 to 2.0)	2%	2	2	1	2.00%
				Individual Total	63.60%
TEAMWORK ASSESSMENT (max = 30%)		Score	Max	Raw	Contribution
Teamwork exercise	3%	9	10	0.9	2.70%
UROS Raw Score	10%	90	100	0.9	9.00%
UROS Cost Effectiveness	10%	92	100	0.92	9.20%
UROS Presentation	5%	8	10	0.8	4.00%
Submit Video	2%	1	1	1	2.00%
			Teamwork total (raw)		26.90%
Teamwork Assessment weight (from above)					0.92
Teamwork Score ((Raw Teamwork score) * (Teamwork weight))					24.75%
TOTAL SCORE FOR THIS STUDENT (Individual Total + Teamwork Score)					**88.3%**
				Grade:	**B**

10. Academic Integrity

By enrolling in this course, each student assumes full responsibility as a participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty. Academic misconduct could result in disciplinary action that may include, but is not limited to a grade of zero on the particular work, a grade of F in the class, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student handbook, the Faculty

Handbook, or the UMBC Policies section of the UMBC Directory. See also
http://www.umbc.edu/provost/AcademicIntegrity/Honorcode.htm

We're quite serious about this. It is a matter of professional ethics (a required part of this course) that all students abide by these requirements. Multiple students in the last few semesters have decided that the rules did not apply to them. They were wrong, and paid the appropriate penalty. Some are no longer studying engineering. Some are no longer at UMBC. Please don't test us on this!

> **If you have any doubt about whether or not a specific action complies with the requirements of the Academic Conduct policy, the proper course of action is to ask Dr. Hennigan, Prof. G or Dr. LaBerge *before* submitting the work. In general, if someone tells you "Oh, that's ok" and you have doubts, ASK!**

11. Repeat Policy

At UMBC, **Engineering students may not register for ENES101** more than two times. They are considered registered for a course if they are enrolled after the end of the schedule adjustment period, **that is, after the add/drop date**. Students may petition the Office of Undergraduate Education for a third and final attempt of a course taken at UMBC or another institution.

The Department of Mechanical Engineering, will not support third attempt petitions to repeat required lower-level courses (100-200) for the purpose of continuing in the major. Furthermore, Mechanical Engineering students are required to earn a "B" in ENES101 before progressing through the Mechanical Engineering Gateway.

The Computer Engineering Program and Chemical Engineering Programs, are very unlikely to support third attempt petitions to repeat required lower-level courses (100-200) for the purpose of continuing in the major.

12. Course Calendar and Related Activities

The detailed course calendar is given in the latest revision of the file **ENES101_Fall2019.pdf**, posted under the syllabus folder on Blackboard. Dr. LaBerge, Dr. Hennigan, Prof. G, and the Teaching Fellows will attempt to adhere to this schedule, but minor deviations may occur. Updates, with new revision numbers, will be posted as necessary.

> **Although we continually reorganize the course to better distribute the course load, you should realize that most of your grade *will* be determined by activities that occur during the *second half* of the semester. Please plan accordingly!**

13. Sexual Misconduct/Neglect

As an instructors, we are considered a Responsible Employee, per UMBC's Policy on Prohibited Sexual Misconduct, Interpersonal Violence, and Other Related Misconduct (located at http://humanrelations.umbc.edu/sexual-misconduct/umbc-resource-page-for-sexual-misconduct-and-other-related-misconduct/). While our goal is for you to be able to share information related to your life experiences through discussion work, we want to be transparent that as Responsible Employees we are required to report disclosures of sexual assault, domestic violence, relationship violence, stalking, and/or gender-based harassment to the University's Title IX Coordinator.

As instructors, we also have a mandatory obligation to report disclosures of or suspected instances of child abuse or neglect (www.usmh.usmd.edu/regents/bylaws/SectionVI/VI150.pdf).

The purpose of these reporting requirements is for the University to inform you of options, supports and resources; you will not be forced to file a report with the police. Further, you are able to receive support and resources, even if you choose to not want any action taken. Please note that in certain situations, based on the nature of the disclosure, the University may need to take action.

14. Welcome to ENES101!

Prof. G, Dr. Hennigan and Dr. LaBerge have co-taught this course multiple times. You will find that all three of us are approachable for questions and discussion. We're enthusiastic about the course and look forward to sharing our experiences with you as you learn how to think like engineers. Your Undergraduate Teaching Fellows share our enthusiasm about the course. Please take advantage of all of the opportunities and support that is available to you so that you get a great foundation for the rest of your engineering education.

Welcome to ENES 101!

Prof. Jamie Gurganus
Mechanical Engineering

Dr. Chris Hennigan
Associate Professor of Chemical, Biochemical and Environmental Engineering

Dr. Chuck LaBerge
Professor of the Practice of Computer Science and Electrical Engineering