



Grady High School
2019-2020 COURSE SYLLABUS
Engineering Concepts

Teacher: **Mike Yarnold**

Room Number: **E116**

Semester: **Fall 2019**

Textbook: **Engineering Fundamentals**

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Tutorial Days: **Tuesdays**

Tutorial Hours: **3:35 – 4:35**

Tutorial Location: **E-116**

Course Description:

Engineering Concepts is second course in the engineering pathway. This course introduces students to the fundamental principles of engineering. Students learn about areas of specialization within engineering and engineering design, and apply engineering tools and procedures as they complete hands-on instructional activities.

A critical component of the CTAE pathway is engagement in the Technology Student Association (**TSA**). TSA projects will allow students to demonstrate their depth of knowledge of the engineering design process and help prepare them for future opportunities in the field of engineering.

Prerequisite: Foundations of Engineering

Course Content Standard - (www.georgiastandards.org):

- Demonstrate employability skills required by business and industry -STEM-EC-1
- Demonstrate and follow safety, health, and environmental standards related to the STEM workplace and apply specific engineering tools, machines, materials and processes in a safe and orderly manner to formulate, analyze, and verify engineering practices and solutions.-STEM-EC-2
- Describe the characteristics of engineering disciplines and engineered products.STEM-EC-3
- Demonstrate the knowledge and skills required to pursue the full range of engineering post-secondary education and career opportunities. STEM-EC-4
- Explain a whole systems approach to the engineering design process to solve a technical problem.STEMEC-5
- Employ critical thinking skills and teamwork skills when working in groups to solve problems, make decisions, achieve group goals and use team members' talents effectively. STEMEC-6
- Summarize and apply engineering solutions through the audience appropriate application of engineering graphics and technical writing.STEM-EC-7
- Apply basic engineering tools and resources to aid in data collection and problem solution sets. STEM-EC-8
- Cite evidence for the role of troubleshooting, research and development, inventions, and innovations in problem solvingSTEM-EC-9
- Explore the use of social media and other 21st century technologies and their impact(s) on the fields of engineering and technologySTEM-EC-10
- Critique and synthesize how related career and technology student organizations are integral parts of career and technology education courses. Students will develop

leadership, interpersonal, and problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (TSA). STEM-EC-11

Course Outline: Engineering Concepts

Lesson 1	Employability skills
Lesson 2	Careers in the Engineering Field
Lesson 3	Safety, Health, and Environmental standards related to the STEM
Lesson 4	The Engineering Design Process to solve engineering/ technological problems
Lesson 5	Planning and Time Management Skills and Tools to enhance results and complete work tasks.
Lesson 6	Oral, Written, and Visual Communication Skills
Lesson 7	Solve Design Problems Using Mathematical and Scientific concepts.
Lesson 8	Create 3D models using appropriate software
Lesson 9	Design and construct a testable prototype.
Lesson 10	Research on Engineering Impacts of Social, Economic, Design and Environmental Issues.
Lesson 11	The impact of business and marketing on engineering design.
Lesson 12	Develop leadership, interpersonal, and problem-solving skills through participation in cocurricular activities associated with the Technology Student Association (TSA).
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Technology Student Association Georgia TSA prepares its members to be successful leaders in a technological society through co-curricular activities like communication, leadership, teamwork, and competitive skill development. Students are exposed to leadership learning and opportunities through officer participation, committee participation, and leadership activities that are incorporated into the classroom and/or chapter meetings. TSA offers over 70 competitive events for middle and high school students, TSA events appeal to a wide audience, events include website design, dragster design, engineering, robotics and more!

TSA Capstone Projects www.gatsa.org/

Georgia (TSA) Technology Student Association 2017-2018 Calendar

Event	Date	Deadline	Cost	Location
CORE	September 14-16	August 8	\$120.00	Tumbling Water Clayton ,GA
TSA Tech Day	October 8	September 6	\$50.00	GA National Fairground, Perry GA
TSA Fall Leadership Conference	November 9-11	October 4	\$150.00	Jekyll Island ,GA Conference Center
TSA State Conference	March 14-16	February 8	\$150.00	Athens , GA
TSA National Conference	June 28 - July 2	N/A	CTAE	Washington ,DC

The students' dues for TSA membership is **\$20.00** that must be paid by **August 26, 2019**.

Pay online on Grady website: <https://www.atlantapublicschools.us/grady>

Go to Quick links Go to Desktop –right-side Choose -Pay School Fee Online Choose –High School Choose – Grady High Choose – TSA Event or Product

Pay by Money Order Make money order payable to Grady High School TSA (Technology Student Association)

Evaluation and Grading:

Course Components	Weights	Grading Scale	
Professional Development <i>TSA, Workshops, Field Experience, Capstone Project, Atlanta Tech Day, Robotics, Ten 80, Code – A-Thon, Catalyst, In venture, Real World Application Challenge, and Georgia Tech Challenges</i>	25%	100-90	A
Homework	10%	89-80	B
Quiz/Project Manager/Class Participation	15%	79-70	C
Tests (or Performances)	25%	69-0	F
Prototypes/Models	25%	Not Evaluated	NE
TOTAL	100%		

Campus Portal for Parents and Guardians: Visit - <https://ic.apsk12.org/portal> to view class schedules, attendance records and grades. To activate your account, visit the school to receive your login (activation key).

Required Materials:

- Flash drive
- One three subjects notebook
- Pens / Pencils
- Ear buds

School-wide Behavioral Expectations: Be present; be respectful; be responsible; be on task; be peaceful, productive problem solvers.

Classroom Positive Behavior Expectations:

	The student will....
1.	Be present and on time for every class, every day.
2.	Be respectful of yourself, all peers, all adults, the school community, and the environment. Individually we are different, together we are Grady
3.	Be responsible for your putting forth your best effort in our work, for your materials, in your actions, and your interactions with the school community. Always report unsafe situations to an adult.
4.	Be on task , be a good listener, a good thinker, and never give up. Follow the teacher directions on all school policies.
5.	Be a peaceful, productive, problem solver. Be polite and well mannered. Think before you act and avoid confrontation. Fighting is never acceptable. Seek help from a trusted adult when you need help with a problem/situation with a peer or adult.
6.	Dispose of food and drink (water ok) before entering the classroom.
7.	Keep all phones and personal electronic devices turned off and out of sight.*
8.	Observe the dress code at all times.
9.	The teacher will review specific laboratory procedures with all students, and each will sign a statement of understanding. Trust will be an important factor. Failure to act responsibly can result in class failure and possible expulsion from the lab

Primary Consequences may include a verbal warning, change seat in classroom, afterschool detention, parent phone call/email, or parent-teacher conference.

Secondary Consequences may include referral to the Discipline Office for In School Suspension, Saturday Detention, or Out-of-School Suspension.

***Technology Policy:** Students may keep their phone turned on in class to use for instructional purposes IF and ONLY IF they abide by the following guidelines:

1. The phone is silenced and vibration mode is turned off.
2. The phone is in the student's bag when not being used for an approved purpose.
3. The phone is used for non-instructional purposes only by permission of the teacher.

If these guidelines are not followed, the device will be confiscated, turned into the Discipline Office, and held until claimed by a parent.

LATE ASSIGNMENTS: It is important that students are responsible and meet established due dates for assignments. A late assignment is defined as work submitted after the teacher collected the assignment. **All missing/not turned in assignments will be recorded in Infinite Campus with an "M-Missing" designation.**

MISSING ASSIGNMENTS (late assignments or unexcused absences): Students with late assignments or unexcused absences will be expected to submit missed work within two weeks of the end of the grading periods. The deadlines for missing assignments are as follows:

- Midterm is October 11th. Deadline September 30th (for assignments from August 12th-Sept. 27th)
- End of Semester is December 20th. Deadline is December 9th (for assignments from September 30th-December 6th)
- Midterm is March 13th. Deadline is March 2nd (for assignments from January 6th-through February 28th)
- End of Semester is May 22nd. Deadline is May 11th (for assignments from March 2nd through May 8th)

As noted above, all missing/not turned in assignments will be recorded in Infinite Campus with an "M-Missing" designation.

Late assignments will be assessed a 20% penalty.

MAKE-UP ASSIGNMENTS (Excused Absences): Students with an excused absence will be expected to submit missed work on or before the third class meeting after the absence. Pre-announced assignments are due upon return to school.

REASSESSMENT OPPORTUNITY: Reassessment opportunities are available for all students on assessments only. The reassessment will be a newly generated teacher assessment and the reassessment score will replace the original score. The reassessment can occur during the class period, tutorial, and/or a lunch-and-learn session (at the teacher's discretion).

School-wide Expectations:

MASTERY LEARNING: With mastery learning, a unit of material is taught, and student understanding is evaluated before students are able to move on to the next unit. Students who have not shown mastery for a particular unit will receive feedback and support in reaching mastery. They may be given practice exercises, study guides, group work or complementary resources to help them improve and achieve mastery. Students who demonstrate mastery of the content for a particular unit are given enrichment exercises like special projects, tasks or academic games to further or broaden their knowledge of the material.

PROGRESS REPORTS: Parents and guardians are informed when students are making unsatisfactory progress in classes. Poor performance will be reported to parents and guardians as soon as problems are evident. Progress reports with plans for remediation will be provided for all students making unsatisfactory progress, and parent-guardians conferences must be scheduled. Unsatisfactory grades should never come as a surprise to parents, guardians, or students. Also, see Board Policy Administrative Regulation IHA-R(1) under "Students in danger of not meeting academic expectations" for further information. Teachers will:

- Contact parents/guardians early in the semester if academic, attendance, or behavioral difficulties are apparent.
- Notify the counselor, Student Support Team (SST)/Response to Intervention (RTI) Chair, and/or an assistant principal of serious problems that are affecting classroom performance.
- Set up parent conferences as necessary.

ATHLETIC ELIGIBILITY: Students wanting to participate in athletic programs governed by the GHSA and extracurricular activities must meet eligibility requirements to participate. The Athletic Director (and the Extracurricular Activities sponsors) will collaborate with teachers to monitor and to identify students in danger of failing courses. A master list of students participating in extracurricular activities and athletics under the auspices of the GHSA will be available to all staff.

Our Vision: A high-performing school where educators inspire, families engage and students love to learn.

Our Mission: Every student will graduate college and career ready with a dedication to community involvement and service.

Our Motto: Individually we are different; together we are Grady.

Grady Graduate Profile (5 Cs): Creative, collaborative, critical thinker, communicative, and a good citizen.



Receipt of Syllabus

Course Name: Engineering Concepts

Teacher Name: Mr. Yarnold

Student Signature

Parent/Guardian Signature

Date

Date