

## 2020 Design Technology Summer Assignments

Subject	Year Group 2020-2021	Assignment
Computer Science	9 (recommended)	Students can work through an introduction to Python programming using <a href="#">Code Combat</a> . This is a fun introduction to programming that will have you fighting monsters to escape a dungeon. For students who would prefer a more formal approach to learning programming <a href="#">this course</a> is excellent and will give you a headstart on the Python programming that we will be learning in the course next year. This course covers more than what we'll need for the AP Computer Science Principles course.
	10 (recommended)	Next year we will be taking part in the Pico CTF competition for international acclaim! Although the competition isn't currently running, you can access previous year's competitions and hone your skills ready for next year. You can do this individually or in teams with friends. Read and follow the instructions on <a href="#">this page</a> to get started. You may also resort to Google searches for extra help with some of the more difficult challenges.
	11 (recommended)	We will be continuing Java programming next year so to keep your programming fresh please log into <a href="#">codingbat</a> , make an account using your CDS credentials, and work through the two warmup collections. If you want more practice, feel free to try some of the other coding challenges there.
	12 (required)	As part of the internal assessment, you need to write your program. In the first week back you will be demonstrating your working programming to your classmates and starting the writeup so make sure it is complete and working before we start back. Feel free to reach out over summer to get help if you need it.
Engineering	9 (recommended)	Many common items involved the expertise of engineers in the initial design, building and testing, and final production. All engineers are problem solvers. The differences among the roles of engineers in varying disciplines are dependent on the types of problems that are solved. In general, there are four major disciplines within the engineering field: <b>chemical, civil, electrical, and mechanical</b> . Many other engineering disciplines are derived as an extension of or a specialization within one of these major disciplines. For

		<p>example, environmental engineering is a sub-discipline of civil engineering. Other engineering disciplines have resulted from the combination of aspects of two or more of the major disciplines. Mechatronics is a relatively new branch of engineering that incorporates both mechanical and electrical engineering principles.</p> <ul style="list-style-type: none"> <li>● Investigate the engineering profession. Some websites that may be helpful in your <b>research</b> include the following: <ul style="list-style-type: none"> <li>○ <a href="https://tryengineering.org/">https://tryengineering.org/</a></li> <li>○ <a href="https://www.careercornerstone.org/">https://www.careercornerstone.org/</a></li> <li>○ <a href="https://www.engineergirl.org/">https://www.engineergirl.org/</a></li> <li>○ <a href="http://www.discovere.org/">http://www.discovere.org/</a></li> </ul> </li> <li>● Answer the question: What is engineering? Based on your current perception, in a few sentences, define the term “engineering”.</li> <li>● Describe the four major disciplines of engineering and identify problems or projects that an engineer in each discipline might encounter. <ul style="list-style-type: none"> <li>○ Chemical engineering</li> <li>○ Civil engineering</li> <li>○ Electrical engineering</li> <li>○ Mechanical engineering</li> </ul> </li> <li>● Present your research via an electronic platform such as Google Slides, Keynote, or PowerPoint. Please include visual representations of each discipline.</li> </ul>
	10 (recommended)	<p>Conduct a personal interview with a professional in the field of engineering, engineering technology, or another high-tech field. Your interview documentation should follow the outline format described below, which consists of three major components:</p> <ol style="list-style-type: none"> <li>1. Professional Background <ul style="list-style-type: none"> <li>○ Interviewee name</li> <li>○ Interviewee’s specific degree</li> <li>○ Interviewee’s place of employment</li> <li>○ Interviewee’s email address and/or phone</li> </ul> </li> <li>2. Interview: Ask the interviewee the following questions and record exact responses. <ul style="list-style-type: none"> <li>○ Please describe your engineering field.</li> <li>○ What is your current job title?</li> </ul> </li> </ol>

		<ul style="list-style-type: none"> <li>○ Please describe your particular job and duties.</li> <li>○ What is your average work schedule?</li> <li>○ Starting with high school, please describe your educational background chronologically.</li> <li>○ If you had it to do over, related to your <b>career</b> or education, would you do anything differently?</li> <li>○ What advice would you give to me as someone interested in pursuing a career path similar to yours?</li> </ul> <p>3. Interviewer Reflection: Reflect on your completed interview and answer the following questions. You may add additional reflections or thoughts.</p> <ul style="list-style-type: none"> <li>○ What surprised you the most about the interview?</li> <li>○ What was the most important piece of information that you learned from the interview?</li> <li>○ How has this interview influenced your feelings about your future career?</li> </ul> <p>Your completed interview documentation should be in electronic form. Please retain for future use in completing your course-long engineering research project and presentation. Contact Mrs. Alan if you have trouble finding a professional to interview.</p>
<b>Entrepreneurship</b>	9 (recommended)	<p>Go through the introductory module of NFTE's Operation Mindset by exploring the eight domains of the entrepreneurial mindset through <b>this interactive digital learning tool</b>. Do the experiential learning activities (Learn and Explore) and take the quiz at the end of each of the eight domains. Take a screenshot of each of the eight quiz results (be sure to include the entire screen so each domain name is included in the picture).</p> <p><b>8 Entrepreneurial Mindset Domains:</b></p> <ol style="list-style-type: none"> <li>1. Initiative &amp; Self Reliance</li> <li>2. Future Orientation</li> <li>3. Creativity &amp; Innovation</li> <li>4. Critical Thinking &amp; Problem Solving</li> <li>5. Communication &amp; Collaboration</li> <li>6. Comfort with Risk</li> <li>7. Flexibility &amp; Adaptability</li> <li>8. Opportunity Recognition</li> </ol>
	10 (recommended)	<p>My Favorite Brand assignment Consider the companies or brands that you may follow on social media, or a brand that you have a strong connection to. Briefly research and write up a quick memo describing how the company got started, what was its first</p>

		product, what problem was it trying to solve or what gap existed in the market at that time that this product was developed for. Compare and contrast its beginning to the company's core purpose today. For example, how has this brand grown, changed or evolved to what it is today? *Microsoft Word has free memo templates*
<b>Business Management</b>	11 (recommended)	Review the attached <a href="#">document</a> on the “CUEGIS” concepts. These are the six concepts that underpin the business management course. Build a presentation in Google Slides using images, news headlines, or short video clips to visually represent each of the six concepts. Do not use text to simply define them, rather use images to share examples.
	12 (required)	First review the CUEGIS concepts as defined by IB <a href="#">here</a> . In June, add one CUEGIS journal entry for the business(es) you are focusing on. The CUEGIS topic you should focus on in June is Globalization only. In July, add one CUEGIS journal entry for the business you are following. The CUEGIS topic for your July entry should be discussing how Globalization has influenced Innovation for the business you are following. Look for news articles that support the monthly topics.
	12 (recommended)	In your IB textbook, review units 1, 2, 3, & 4 over the summer. Refer to the “review” questions at the end of each textbook section. Challenge yourself over the summer to answer any two review questions (write directly in your class notebook) from each section. Any student who completes this will be placed in a random drawing to win a prize the first week of school. The prizes may include a \$25 Amazon gift card and/or a 10-point formative pass.