

# TEAM 12 Professionalism

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## 5. Professionalism

### 5.1. Areas of Responsibility

Area of responsibility	Definition	NSPE Canon	IEEE	Explanation [brief description, how they differ from NSPE canon]
Work Competence	Perform work of high quality, integrity, timeliness, and professional competence	Perform services only in areas of their competence; Avoid deceptive acts	6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations 5. to improve the understanding of technology; its appropriate application, and potential consequences	These two descriptions relate to work competence in that they describe improving the knowledge of current technology being used as well as only doing the work one is qualified for.  They differ from NSPE by not mentioning anything to do with performing deceptive actions but they go further in depth into what one's area is determined as.
Financial Responsibility	Deliver products and services of realizable value and at reasonable costs	Act for each employer or client as faithful agents or trustees	4. to reject bribery in all its forms	To reject bribery relates directly to financial responsibility because it pertains to performing work honestly despite other potential benefits.  The IEEE code is a very broad description whereas the NSPE code describes what the role of the employee is in relation to the work they perform for either the employer or client

Communication Honesty	Report work truthfully, without deception, and understandable to stakeholders	Issue public statements only in an objective and truthful manner; Avoid deceptive acts	3. to be honest and realistic in stating claims or estimates based on available data 2. to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist	The two IEEE codes relate to communication honesty because they focus on disclosing all information honestly to both the general public and to employers.  These differ from NSPE because they mention that communication honesty not only encompasses disclosing information to the public, but also disclosing conflicts of interest to an employer.
Health, Safety, Well Being	Minimize risks to safety, health, and well-being of stakeholders	Hold paramount the safety, health, and welfare of the public	1. to accept responsibility in making decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment	This IEEE code correlates directly to Health Safety and Well-being in that it states we should make these things an absolute priority when developing a product and that the public should be made aware of any risks associated with it.  There is not much of a difference between the IEEE and NSPE with the exception of the IEEE code mentioning taking responsibility as well as disclosing information. They both portray the same value in safety, however.
Property Ownership	Respect property, ideas, and information of clients and others	Act for each employer or client as faithful agents or trustees	9. to avoid injuring others, their property, reputation, or employment by false or malicious action	Code 9 from the IEEE code of ethics is very similar, saying that one should avoid injury to others and property and their reputation.  This differs from the NSPE code since it does not directly mention any client or information.
Sustainability	Protect	Adhere to		There was no similar code

	environment and natural resources locally and globally	principles of sustainable development to protect the environment for future generations		found in the IEEE code of ethics which related to sustainability more than another area of responsibility.
Social Responsibility	Produce products and services that benefit society and communities	Conduct them honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession	<p>8. to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression</p> <p>7. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others</p> <p>10. to assist colleagues and co-workers in their professional development and to support them in following this code of ethics</p>	<p>There were three different codes we found in the IEEE code of ethics that apply to Social Responsibility. 8, 9, and 10 all mention some form of treating others fairly, conducting work honestly, and supporting peers and co-workers</p> <p>These differ from the NSPE code since the IEEE codes do not directly say to benefit society or communities.</p>

## 5.2 Project Specific Professional Responsibility Areas

Area of responsibility	Team Performance	Application & Justification
Work Competence	High	Work competence is crucial to our projects professional context because timeliness and high quality are of necessity. During this semester, we need to focus and work timely to make sure we are able to complete what we want before next year. Along with this, we want to make sure the work we do is of high quality so we don't have issues down the road and have to repeat steps. Also, when printing DNA properly, there can be no little lazy mistakes.
Financial Responsibility	Low	Currently, although our project gives us a \$5,000 budget, our supervisor provided us with the necessary photon printer. This semester, we will most likely not need any additional parts of tools to complete what we want, so financial responsibility is currently of low concern. For next year, when we need to buy more parts to physically print, this area of responsibility may be moved to a medium. But I don't believe we will reach near our budget, so this shouldn't be a huge concern.
Communication Honesty	Medium	This area of responsibility is of medium concern due to the group doing individual work. When assigned work to do weekly, it is important that work is properly communicated as well as done, honestly. It would be easy to tell our advisor/stakeholder we did certain work that is not currently done, which is never wanted or desired. This could potentially happen due to miscommunication or someone trying to cover up for not doing the work they are supposed to.
Health, Safety, Well Being	Low	When looking into health and safety, we are mainly concerned with the health and safety of the users. Within our project, the only dangers so far that we could run into are within the 3D printer itself.
Property Ownership	High	This category is of high concern due to a few reasons. There are a few ways to go about solving every problem whether it's coding, hardware, or theoretical. While asking for guidance from our mentor, as well as working in a team, we all need to make sure we are respectful to each other and their ideas. More importantly, our mentor gave us access to a photon 3D printer, which is not only expensive, but also is his property. Due to both of these facts we must be respectful by taking care of and properly storing the printer.
Sustainability	Low	Our project doesn't have many earth harming parts to it. The main component is the photon 3D printer which prints nucleotides one at a time until we create DNA. We will also use a computer to control the 3D printer. None of these things are too harmful to the

		environment or global resources. The worst part would be the printer potentially using a small amount of electricity to constantly run while it prints.
Social Responsibility	High	This area of responsibility is important to our project due to the end goal of it. In the end, hopefully, we will be able to successfully print DNA which will benefit society. Printing DNA will help with antibody-based drug development, donor DNA synthesis, metabolic pathway engineering, and gene therapy. All of these things will be highly beneficial to society.

### 5.3. Most Applicable Professional Responsibility Area

We believe that the most applicable professional responsibility area in regards to our project is Work Competence. What this means to our project is very important because the work that we are doing is very involved and complicated. Everyone must complete their work with confidence and competence because the nature of our project can lead a very small error to grow or develop into a major error later on. A high quality of work is a necessity when printing DNA because if one individual nucleotide inserted on the Oligos is improper, the entire strand of DNA will need to be repeated. So we need to precisely add the proper nucleotide to the proper oligos upon printing. On top of high quality of work, we need to be timely with our work as well. During this semester we have several goals we want to reach. This includes; communicating with the printer, coding the user interface, and controlling/calibrating the LCD. To make sure we get all of this done, we must complete our high quality work in a timely fashion. A way we can help make sure this gets done is by our weekly reports and team meetings.