

## REQUEST FOR PROPOSAL ASSIGNMENT

Due: 2013-02-16 2400

Submitter: Team

Weight: 20%

### Overview

The Request for Proposal (RFP) is a document that establishes an engineering design request in a particular area. It is similar to the Design Brief, but it goes into more detail and incorporates significantly more and better research. An RFP defines a particular project, and generally includes background information, a specific problem to be solved or service to be rendered, and requirements for any proposed solution or service. Some RFPs include additional information such as delivery schedules and legal agreements. In Praxis II, your team does not need to worry about the legalities, and the schedule is defined by the timeline of the course.

### Stakeholders

- The Praxis II Teaching Team

The primary interest of the teaching team is to ensure the quality of the educational experience of all students in the course. As such, the teaching team has five main interests in the project:

1. Well-defined problems that allow undergraduate ESC teams to generate meaningful solutions.
2. Real engagement with appropriate and authentic community stakeholders that can be sustained throughout the term, both for the RFP writing team and any teams that may work to solve the RFP.
3. Engineered improvements to quality of life of a community group; that is, quality design work that clearly solves problems and demonstrates students' understanding of the design process.
4. Genuine “needs” being addressed. (Note: ‘genuine’ does not mean ‘basic.’ Needs at any point on the hierarchy can be addressed.) Frivolous problems or contrived communities should be avoided.
5. Interventions that are responsible economically, environmentally, socially, and politically.

- A Specific City of Toronto Community-in-need

As the focus of all of the activities in Praxis II, the specific City of Toronto Community-in-need is a core stakeholder. While the specific inputs of this stakeholder will vary from community to community, at minimum, the communities need:

1. To be **treated with respect**. This includes not being inundated with too many requests or demands (especially uninformed requests), flooded by e-mails, texts, or telephone calls.
2. To play an active role in identifying both the community's needs and its assets.

- The City of Toronto (e.g. City services, bureaucracy, and governance)

By definition a City of Toronto Community-in-need will have a relationship to the City of Toronto. The relationship may only be geographical, or may include elements of City services, bureaucracy, and governance. The City has many existing and planned initiatives that support its various and varied Communities, and seeks both collaboration and the efficient and effective use of City resources.

- Solution Providers (e.g. Praxis II students in Phase II of the course)

Solution providers will be responding to the eventual RFP with both conceptual and detailed designs, along with one or more prototypes of varying fidelities. As such, these teams require

1. a clear problem definition that creates a meaningful design space and a problem that can be solved by first-year students in approximately six weeks;
2. access to the stakeholder community such that they can understand the problem from that perspective and can develop a working rapport with the community in need; and
3. sufficient research to form a strong starting point for developing the solution.

- The Division of Engineering Science (EngSci) and Faculty of Applied Science and Engineering (FASE)

Both EngSci and the FASE want their students to make a **real** difference in their communities and in the broader world. They also want students in Praxis II to continue the tradition of excellence that has

resulted in interest from the TTC, the City of Toronto, and the media. At the same time both organizations would like to avoid any legal or ethical issues associated with student efforts to (e.g.) engage with Stakeholders, acquire information, evaluate and test their designs, etc.

## Deliverables

1. **The Request for Proposal:** The primary deliverable in response to this assignment is **an RFP** that defines an engineering design problem in response to the design challenge of “improve the quality of life of a City of Toronto community-in-need.”
2. **Abstract:** The Proposal must **both** include and be accompanied by a separate Abstract. This Abstract has critical importance as, for successful RFPs, it will be distributed to the solution providers as a means by which to choose and rank which solution they want to work on.

## Requirements

### High-level Objectives

1. Identify an engineering problem for a Community-in-need in Toronto.
2. Develop a comprehensive, authentic, and substantiated understanding of one or more communities in the City of Toronto with which you are not already strongly affiliated
3. Develop a comprehensive, authentic, and substantiated understanding of a challenge that relates to community need(s) and quality of life
4. Frame a challenge as an engineering design problem that can be addressed by a small team of 1st year engineering students
5. Use praxis (i.e. the melding of experience, judgment, and formal models, tools, and techniques) to work effectively and efficiently.

### Detailed Objectives

1. Identify an appropriate, non-contrived, City of Toronto community with which you are not affiliated as a student
2. Engage in direct and indirect research on the identified community and its context
3. Identify genuine need(s) of the identified community
4. Engage in direct and indirect research on the identified need(s)
5. Frame your researched community and need(s) as an engineering design problem:
  - a. Model the complex system in question
  - b. Identify and scope a specific, achievable, engineering design problem
  - c. Identify and develop appropriate engineering requirements, including objectives, metrics, criteria, and (where appropriate) constraints
6. Document your engineering framing as an RFP
7. Develop and follow an engineering design process as you complete your objectives
8. Leverage formal engineering design tools as you follow and document your engineering design process

### Constraints

Note that unless otherwise stated, violation of a constraint will **not** result in the submission being rejected and a grade of 0 on the assignment. The exact penalty for violating a constraint will be levied when the assignment is assessed based on the judgments of the assessor and the Teaching Team.

### Content

1. The authorship of deliverables **must** be anonymous (i.e. the only identifying information is your team identifier in the name of the file)
2. The community selected for the RFP **must not** be a community in which the primary stakeholders are university students.

### Deliverable(s)

3. The Proposal and Abstract **should** be formatted using an 11 point serif font with 1.25 spacing and 1 inch margins (metric: measurement of the font, spacing, and margins)

4. The Proposal **should** be less than or equal to 12 ( $\leq 12$ ) pages in length, **excluding** title page, abstract, references, appendices, and non-textual elements (metric: page count)
5. The Abstract **must** be less than or equal to one ( $\leq 1$ ) page in length, **including** references and non-textual elements (metric: page count)
6. The Proposal **must** include **both** an Abstract and a list of References (metric: presence)
7. References and citations in both the Proposal and Abstract **must** be in either IEEE or CBE format. (metric: adherence to the chosen format)

#### Submissions

8. The Proposal **should** be submitted as a standalone PDF (metric: file type)
9. The Abstract **must** be submitted as a standalone PDF (metric: file type)
10. The Abstract embedded within the Proposal **must** be identical to the Abstract submitted separately (metric: textual comparison)
11. Multiple files **should** be archived in a single ZIP or RAR file (metric: file type)
12. All file names for the RFP, Abstract, and Reference List **must** include both your team identifier, and a meaningful title (metric: presence and uniqueness)

#### Criteria

Note that the metrics and achievement level descriptors for these criteria will be defined in an Independent Assessment Tool that will be released prior to the due date. For all of the criteria defined in that Tool, “more”, “higher”, or “greater” will be preferred. Also note that the criteria are not weighted equally.

#### Argument and evidence

1. Credibility of research (e.g. depth of investigation; corroboration among multiple sources and source types; balance of direct and indirect sources; appropriate assessments of source credibility, etc.)
2. Strength of claims, as shown by logical justification and support from evidence (e.g. avoidance of unwarranted generalizations; contextualization of sources and qualification of claims)

#### Community identification and need selection

3. Legitimacy of the community
4. Genuineness of the identified need(s) as distinguished from (e.g.) wants, desires, demands, etc.
5. Richness and clarity of the description of the community, need(s), stakeholders, and context, and of the interrelationships between these elements

#### Engineering framing and scoping

6. Basis on a defined, defensible understanding of “engineering design” (e.g. the justification that the problem as framed is an “engineering problem”?)
7. Appropriateness, breadth, and completeness of the functional and non-functional requirements for design solutions (e.g. codes and standards; quality-of-life indicators; accessibility; safety; adversity)
8. Potential of a solution to the framed problem to meet original challenge of “improve the quality of life of the City of Toronto community-in-need”
9. Balance between providing details and (over-)prescribing a solution
10. Potential for a team of four (4) 1st year EngSci students to design and prototype a credible solution given the time and resources available.

#### Organization and writing

11. Clarity, correctness, conciseness, and overall design of the prose.
12. Quality of the structure and organization to create a coherent, logical, non-redundant reading experience.
13. Use of the strategies and principles for effective communication introduced in Praxis I and II.
14. Value added to the document by any non-textual content. (e.g. by providing direct evidence, arranging information effectively, and contributing to the reader’s understanding)
15. Professionalism of both the tone and the language used throughout the document.