

Nano Report Outline

Engineering 1282H

Spring 2015

Team Y1

Mahnoor Naqvi

Tony Satroplus

Spandan Shah

Matthew Viens

Stefan Heglas, Wednesday 3:00 PM

Date of Submission: 03/25/15

1. Title Page
2. Executive Summary
3. Table of Contents
 - a. This is basically the piece of the outline for the core report
 - b. So take the outline and basically just add page numbers
4. List of Figures and Tables
 - a. This is basically the piece of the outline for the core report
 - b. So take the outline and basically just add page numbers
5. Introduction
 - a. Team Introduction
 - i. Matthew Viens – Computer Engineering major with focus on the theoretical side of microfluidics and computer dependent side
 - ii. Tony Satroplus – BME major, team leader, split between lab experimentation and documentation work
 - iii. Spandan Shah – Chemical Engineering major with focus on the physical running of the data trials
 - iv. Mahnoor Naqvi – Undecided engineering with focus on the physical running of the data trials
6. Disease Background
 - a. Current treatments
 - i. How is it done?
 - ii. Issues
 - b. Current research and proposed future applications
 - i. Troponin levels
 - ii. Nanotechnology
 - c. Problem Statement
 - i. Construct an LOC system to detect heart disease
7. NANOLYSER Design
 - a. Design parameters
 - i. Portable
 - ii. Minimally invasive
 - iii. Single drop of blood
 - iv. LOC characteristic
 - b. Design considerations and philosophy
 - i. Ease of operation – Simple interface
 - ii. Results must be easy to interpret
 - iii. Disposable or reusable?
 - c. Ideal operational characteristics
 - i. One step action required by user
 - ii. Fast analysis
 - iii. Accurate analysis

- iv. Limiting false negatives
 - d. Fabrication considerations
 - i. Pressure driven flow
 - ii. Material
 - iii. Threshold for troponin levels
 - e. Biological and biochemical considerations
 - i. Appropriate antibody
 - ii. Biocompatibility
 - f. Final Design
 - i. Microfluidic features
 - ii. Nanoscale features
 - iii. Circuit
 - iv. Process steps
- 8. Summary and Conclusions
 - a. Limitations
 - i. Theoretical
 - ii. Cost
 - iii. Reusability
 - b. Future work
 - i. Reusability
 - ii. Manufacturing a prototype
 - iii. Test accuracy
 - iv. Patent
 - c. Significance
 - i. Speed
 - ii. Cost
 - iii. Portability
- 9. Bibliography
 - a. Carmen references
 - b. Paper references
- 10. Appendices