Students should complete, electronically sign, and upload this form on Canvas. The capstone supervisor will then use Canvas to comment, and note a grade of S(atisfactory) or U(nsatisfactory). The capstone coordinator will collate and submit the S/U grades to registry. If a student’s progress is Unsatisfactory, s/he must submit a work plan for the supervisor’s approval, prior to the end of Week 2 of Semester 2. Only with this approval, may the student register for the Semester 2 capstone module. A grade of ‘IP’ will then be entered for Semester 1.

|  |  |
| --- | --- |
| Capstone Project Title: Formulation of a Strictly Budget Balanced, Allocative Efficient and  Bayesian Incentive Compatible Mechanism for a Global Company  Distributing Emission Reductions to Strategic Departments and  Supply Chain Partners | |
| Student Name: Simone Genetin | Student ID: A0209686N |
| Supervisor Name: Andreas Heinecke \ Philipp Strack | Major: Mathematical, Computational and Statistical Sciences |

|  |
| --- |
| **Student Self-Assessment** |
| Which goals in your capstone proposal have been achieved thus far? Are you on track with your timeline? Which skills have you acquired or practiced? What problems, if any, have you encountered? |
| My first semester has been mainly dedicated to studying the relevant theory and reading of related works. I started by reading the Nobel-winning paper by Myerson, ’Optimal Auction Design’; [4]. Then, given that had not taken a Mechanism Design course in my academic career, the understanding of this problem as well as the drafting of this report took the careful reading of hundreds of pages from different sources. I thus managed to scope the problem at hand to the formulation of a specific mechanism, as well as defined the relevant environment; I defined the necessary conditions to be satisfied by the functions I will write and understood the problems that the formulation of a BIC mechanism poses in terms of collusion between emitting agents |
| What goals will you tackle next semester? If you have faced challenges in Semester 1, how do you hope to overcome these in Semester 2? What academic skills do you aim to cultivate? |
| 1.Mid January 2023: I will choose whether to treat the problem as a forward or reverse auction; formulate an allocation function k∗(.) and payment function t(.) which satisfy AE and the dAGVA payment scheme; prove that the aforementioned properties are satisfied. It is likely that an allocation and payment function will be formulated for both a reverse and forward auction scheme; 2. End of January 2023: I will add the functions to the report, once feedback will be received; 3. Mid February 2023: I will formulate case studies to compare the mechanism formulated with that of Bagchi et. al. and Lakshimi et. al.; 4. End of February 2023: I will evaluate the choice of formulating a BIC mechanism against a DSIC mechanism, with brief considerations of the likelihood of collusion and potential solutions to the prob- lem; 5. March 2023: review of achievements and write-up for final submission; 6. End of March 2023: final submission.  Formulating the correct allocation function will be a challenge surely. I am sure that with the help of Professor Strack and Heinecke, I will be able to overcome it. I also wish to become more acquainted with the process necessary to produce a thesis that is worthy of publication on an academic journal. |

Student’s Signature : Date: