Contruction Project Management Course

Fall Term - Academic Year 2021-22

Capstone Project

Instructors:

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Objective of the work

The term project is aimed at learning Project Management by doing. This will be obtained via reproducing in an academic context the real-life process of preparing, monitoring and controlling a project management plan in compliance to the course lecture and using the PMBoK as a reference.

Most of the work will be executed using Microsoft Project (Standard or Professional). The software package is available on all LEP workstations. Also, it is possible to download the software thanks to the academic alliance between Politecnico di Torino and Microsoft (http://msdnaa.polito.it/). A few recitation hours will be spent to let everybody get started with using the software tool.

Team formation

The work will be performed in small teams. The maximum number of members per team is to be defined according to the total number of students in the class. All members will cooperate on the job and nominate a team leader (i.e.: Project Manager) in charge of coordinating the team and monitoring the job status during the full term. It is mandatory to blend the composition of team members in nationality and gender.

Each team will work in a professional and autonomous manner. We recommend adopting a team-collaboration software tool such as Trello, Freedcamp, Jira, etc. Some of these tools are made available to students by requesting access to the pm-lab.polito.it workbench (https://pm-lab.polito.it/portfolio)

Organization

On a weekly basis, the teams will meet the instructors to report about the job done, get information and suggestion for the next steps. These meetings are according to the timetable provided by instructors. Simultaneously, in the LEP computer room TA will provide information, tips and assistance on using the Microsoft Project software tool.

The schedule of submission is detailed in the next section. Final presentations will be held for those teams that make it to the shortlist to present live (see "Presentation to Steering Committee" in the next section). Shortlisted teams will be notified after submission.

Schedule of events

07/10/2019 MS Project tutorial

07/10/2019 Capstone Project instructions delivered

21/10/2019 Plenary meeting

xx/10/2019 Submittal of Initiating deliverables **(D1)**

12/11/2019 Submittal of Planning deliverables **(D2)**

18/12/2019 Submittal of Bid (D2)

07/01/2022 Shortlisted bidders announced

11/01/2022 Final presentation of shortlisted Bids (D4)

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Referenced document

1. 2021 Term Project instruction | (this document)
2. Tender Documents (Prepared by Owner)
    i. Cover letter
    ii. Tender - Instructions to Bidders
    iii. Project specifications and Data
    iv. Contract Conditions

Scope of Term Project

As part of an international project, this work reproduces the real-life process of preparing a Bid (ie. Proposal) to supply a Swing Bridge, in response to a Tender from an Owner, within the Metro Stay Cabled Bridge Program, located in Istanbul, Turkey.

Project background

Your company received from the Owner a request to Bid for thei Tender - Swing Bridge Manufacturing and Assembly Project.
See 2-1-Tender-CL (cover letter) and 2-2-Tender-IB (instruction to Bidders).

This assignment is inspired by, but not consistent with, a real project that has been completed (https://en.wikipedia.org/wiki/Golden_Horn_Metro_Bridge). Most pieces of information and data have been adjusted for educational purposes only and non-confidential information from the project has been used for developing this case.

The timing for commencement and submittals is as follows (reference is made to Agreement relevant clauses):

Date	Contract term	Term	Special conditions
27/08/2019	Agreement effective		
07/10/2019	Commencement of work		
Clause 7.1 (41			

Capstone – Process guidelines (as per ISO21502)

To understand the following instructions, it is highly suggested to have a working understating of the ISO21502 (available through PoliTO library system, link available on course site).

Process Chart

Initiating Process - Submit by effective date D1

4.1 Develop Project Charter (Integration Management)

Be sure to summarize all available information into a Project Charter, prepared based on a template of your own choosing. **Deliver it as a MS Word file**.

Planning - Submit by effective date D1

4.2 Develop a Project Management Plan (Integration Management)

Be sure to develop a fruitful team-working environment. Brainstorm different project conditions arising from late commencement of the work. Submit a Project Management Plan, under the form of a Memorandum of Key Facts and Figures. **Deliver it as a Power Point file.**

Coordinate your team's activities to integrate, collect, and edit all subsidiary deliverables resulting from the instructions below.

5.3 Create a WBS (Scope Management)

Fully develop a WBS in MS Project using the data available from RFP and BID.

6. Time Management

Fully develop a Schedule in MS Project. **Deliver it as a MS Project file**.

7. Cost Management

Prepare a Cost Summary, including Direct Cost, Overhead Cost, Contingency Budget and Interest on Capital. **Deliver it as a MS Excel file, using the Price Breakdown template (BID_PBD)**. Use the data from the BID Price Breakdown for the Overhead Calculation. For Interest use the results of the Cash Flow analysis. For Contingency Budget use the results from your Risk Management activities (see below).

Cash flow Analysis

Prepare project Cash flow following Article 8 – Payment Scheme in the RFP Condition of Contract. Assume that annual interest rate is 6% on overdraft and 2% on positive bank account balance. For Contingency use the results from your Risk Management activities (see below). Assume that the Owner pays 20% of the Price at the start, and the remaining 80% in monthly instalments once the erection phase has started. Monthly instalments are paid by the owner in relation to the amount of work completed in the period. Owner pays instalments associated with actual value of the work progresson Owner's site. **Deliver it as a MS Excel file**.

11. Risk Management

Risks are identified in the risk register file integrating these instructions. Assume that the only tasks subjected to risks are the following: all "Detailed Engineering" tasks, "Swing Bridge Installation", "Pre-assembly on site" and "Transportation of Lift and Turn Cylinder". Evaluate worst case (95% confidence interval) for Cost Index (CI) and Schedule Index (SI) for these tasks. Apply CI to tasks costs and SI to tasks durations and determine the new direct costs and project duration. Delays contingency shall be obtained applying liquidated damages agreed in Memorandum 1 (RFP_ME1). **Deliver Contingency Budget calculations in a MS Excel File** and pass Contingency figure to cost management. **Deliver new project schedule at risk in a MS Project file**.

Deliverables Checklist

The following deliverables must be submitted at the end of the Term Project, according to the timing above mentioned. Make sure that in the submittal make all deliverables are clearly attributed to the corresponding PMBOK process as per table.

Deliverables to be submitted by effective date D1:

Deliverables to be submitted by effective date D4:
