17-622 ESTIMATING SOFTWARE DEV. & MAINT. PROJECTS

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Ultimately time, resources and money are the three criteria by which society and organizations decide what gets build, how it is built and by whom and in consequence, the importance of having credible and reliable estimates cannot be overstressed. Unrealistically small budgets as well as unnecessarily large ones result in misallocation of resources and wasteful spending.

The objective of the course is to teach participants how to develop estimates for software development and maintenance projects, how to communicate them to others and how to include them in a contract. Although the orientation is basically quantitative, the course will delve into the cognitive biases and the administrative behaviors that afflict the estimation process. The course will also address the use of parametric models and counting methods but it is not a course about COCOMO or Function Points.

Course content

1. General issues in cost estimation
2. Back of the envelope calculations
3. Quantifying uncertainty
4. Incorporating uncertainty into the estimates
5. Understanding the scope of work
6. Cost behaviors
   a. Cost objects, activities and cost drivers
   b. Fixed, variable, mixed and step costs
   c. Economies/Diseconomies of scale
   d. Calculation techniques
7. Calculating the total budget & verifying its sanity
8. Judgment based estimations
   a. Planning Poker
   b. Paired comparisons
9. Functional sizing methods (FP, Use Case Points, Web Points)
10. Parametric models (Probe, Cocomo II,)
11. From effort to schedule
12. Release planning

The course will include the following exercises

1. Ad-hoc estimation of the Time Reporting System (To be used as baseline for comparison with other estimation methods)
2. Estimation of the Time Reporting System using an expert technique and a counting technique
3. Preparation of a budget for an unfamiliar project, which will give students the participants the opportunity to exercise the concepts taught in the course and to practice defending it in front of their colleagues