IE 477-78 Feedback after Coordinator Presentations and on Future Work

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December 11, 2019

Recall: Learning Outcomes and Project Work

- THROUGHOUT THE PROJECT WORK
  - Effectively use teamwork (Peer Evaluation)
  - Prepare reports and presentations to explain ideas
  - Practice professional and ethical responsibility
- PROPOSAL
  - Analyze system data to identify problems – Agreement on the SCOPE
- END OF FALL SEMESTER
  - Access information and do literature survey – IE CAPSTONE
  - Formulate problems and propose solution methodologies – FEEDBACK
  - Construct mathematical models of the system – MODEL, VERIFY
- MARCH 2020
  - VALIDATE based on “actual” data
  - What-if analyses, integration, implementation – BENCHMARKING, REPORT

Common Feedback - ALL groups

- Our input: From your presentations to coordinators (most recent), as well as your previous work
- Our output: This presentation (common feedback) + a letter (message) to each group

- Related to your approach
- Related to planning your work
- Related to communicating your work

Feedback: Related to approach

- It is understable that you are missing some components: first experience

1) Need to question the given limits, contraints imposed:
   - Your role: You need to persuade all sides, if necessary, to lift those limits
   - Do not take anything for granted
   - Persuasion requires verification – not words
2) Lack of focus on more important/crucial ideas
3) Measures/metric for comparison are missing

Feedback: Related to approach

4) System design – not solving a problem only once and go home, but implement it repeatedly
   - Systemize the way to implement your proposed methods repeatedly
   - Systemize how you approached the problem to obtain your proposed solution to update

   *** Recall the next slide on page 6**

5) Prerequisite to systemize: Show your approach with a clear time-line: when information is visible and when decisions are taken.

Recall: Explanations – IE CAPSTONE-2

- IE Capstone Project – more specifically
  - Prerequisites: IE303, IE325, IE375 and others
  - Text Books for all courses – First thing to read
  - ~ 60 % of the your work can be handled
  - References in the text book – a good start to go further
- Get support + advice from current TA's of other courses – Source: Course web pages
- **Designing** a system means a preparation to repeatedly implement the proposed approach over time under almost all conditions

Feedback: Related to approach

6) Verification – You have to make sure that you know (and company agrees) on how to verify your approach.

   *** Recall the next slide on page 8**

7) Validation – You have to make sure that you know and company agrees on how, when and with what input/output to make the validation of your approach.

   *** Recall the two slides on validation and benchmarking on pages 9 and 10**

Recall: Explanations - VERIFY

What is model verification?

- Check if model constructed (approach) is yielding results, solutions as intended (expected)
  - Make sure that everything is correctly represented (Math program, computer code, state-space, ...)
  - Debug, intuition, sanity check, discuss with advisors
  - No need to have real data – generate samples
  - Make sure you have a model to represent the trade-offs present in the real system
- Is your approach useful? Persuade all sides

Recall: Explanations - VALIDATE

What is model validation?

- Check if models constructed are yielding results comparable to current affairs when current decisions are implemented
- Make sure that you come up with a way of validating (not necessarily exact)
  - Use of past data to compare
  - Implementing your approach in a small-scaled part of the real-system
  - Show your sample results and ask the firm to validate

Recall: Explanations – BENCHMARKING

- Benchmarking is testing and showing the benefit of your approach compared to what is currently done – a natural consequence of the VALIDATION step.
- You need the following:
  - How are those decisions made in the current system? (ANALYSIS OF THE CURRENT SYSTEM)
  - Performance measures (ANALYSIS OF THE CURRENT SYSTEM)
  - Data needs
  - Comparison methods: Simulation using the past data; Implementation of your approach by the company; others

Feedback: Related to planning your work

- We want you to make sure that you see your future activities as detailed as possible.

1) Verification, validation – as explained before you need to plan them by the end of December.

2) Work packages and time charts are needed for you to consider these activities

3) Your IE478 Final Report Requirements

*** Recall the next slide on pages 12, 13 and 14**

4) Your IE477 Final Report Requirements

*** Recall the next slide on pages 15**

Recall: Explanations – REPORT-2

Final Report Work (IE478) – Should include:

1) Details of your approach to solve the identified problem (only the final version) agreed upon by SCOPE (submitted to academic advisors and company) for grading/understanding the impact
2) Plan to integrate your solution with the system's current operation – System Integration
3) Details of how you analyzed the system and how you carried out the computations, estimations, etc of your approach as a manual (submitted to the company) so that they can further use it. Manual is more algorithmic

Recall: IE 478 Assessment Criteria-1
(May 2019 presentation – M.S. Aktürk)

- **System design:**
  - Model development and validation: The proposed model can be an optimization, statistical, database, marketing or simulation model
  - Consideration of alternatives: Extent to which the team demonstrated critical thinking in the design process
  - Scenario/ what if analysis: Model usage for changing environments
  - Creativity: Extent to which the team developed a novel solution to the design problem while still achieving a functional design
  - Technical competencies: Extent to which and validity of the technical aspects have been used properly, including methods, tools and techniques

Recall: IE 478 Assessment Criteria-2
(May 2019 presentation – M.S. Aktürk)

- **Success of the design:**
  - Attainment of project deliverables: Extent to which the goals of the project and end-user specifications have been met
  - Benchmarking: A comparison of the current and proposed system should be provided along with a cost/benefit analysis
  - Implementation and system integration: Extent to which the proposed system is successfully implemented and integrated into the existing system – if not applicable, then a detailed implementation plan and a pilot study is to be provided)
  - End-user evaluation and assessment: A written statement from the industrial advisor(s) evaluating the project
  - Impact on the organization: Affect of the proposed system on the organization (financial impact, simplified operations, etc) – in terms of performance measure(s) used in validation
  - Global and societal impact: As an additional consideration

IE 477 Assessment Criteria

- Your progress with respect to the level desired for the complete project, see IE478 Assessment Criteria
- Our expectation:
  - Brief definition of the Problem
    - Analysis of the current system
  - Literature Review
    - Previous studies in the scientific literature
    - Similar Studies in the industry
  - Proposed Methodology
    - Model Development and verification
  - Timetable + clearly specified work packages (and preliminaries on the work should have been initiated) for IE478

Feedback: Related to communicating your work

- It is understandable that you are missing a number of important issues in your presentations and report writing – visit Eng401 until it's too late
- feedback on reports - take it seriously
- feedback on presentations - take it seriously
- Minor but important issues:
  - Write dates on reports and presentations (first page) – we'll update the availbale format
  - Make sure that you have relevant and meaningful titles for the project (both in English and Turkish) that all parties will accept
  - Title page of presentations/reports should contain all names

Final Remarks
grading + final presentations

- We are planning to grant I grade (incomplete grade) for at least two situations described below:
  - those groups which we think will considerably improve their position after a couple of weeks of additional work
  - those groups which will fail if the group can not bring the project to an acceptable level
- In the next round of group presentations to us (January 16-17, 2020) we are planning to ask questions to individuals - just to confirm team work component of the course.