Description:
Each student is required to form a two-member group to work on a software engineering hands-on project (Note: the hands-on project group and the literature review group may be different). The hands-on project must belong to one of the following three types:

1. A modeling project based on DEVS using MS4Me (or other software modeling tools if approved by the instructor).
2. A project that demonstrates a particular type of software development (e.g., mobile Apps development).
3. A project based on cutting-edge tools related to software engineering, such as program analysis tools, automated software test tools, extreme programming tools or supporting tools, and other cutting-edge tools.

For the type 1 projects, the projects will use the Discrete Event System Specification (DEVS) formalism and the MS4Me environment. Each group will define a problem in one of the topical areas listed below and specify the goal of its modeling and simulation study. Students may also choose their own topic areas (e.g., related to their Master or Ph.D. thesis) after discussing with and granted by the instructor. In the project, students will develop models and run simulations in MS4Me, collect simulation results and conduct preliminary analysis of the results.

Suggested Topics:
- Workflow modeling (process + time-based reminder + simulation-based evaluation of potentially large number of cases)
  - Business process workflow
    - Example: from orders placed online, to orders shipped from warehouse and eventually delivered to the customers.
  - Medical pathways
  - Hospital process workflow
    - Example: medical billing process, patient admission and discharge process.

For the type 2 and type 3 hands-on projects, the projects cannot be based on the existing examples provided by the tools. You need to develop your own project or examples. It is desirable (although not required) for the projects to be “extended” from the advanced topic review (but keep in mind that a hands-on project needs to be a concrete project instead of a review).

Each group needs to finish a project report and give a 13-minute presentation and demonstration at the end of the semester. For the type 1 project, the project report should include descriptions of the problem, the developed models (including diagrams and some pseudo code), simulation results (including snapshots of the simulation, and some preliminary analysis of the results), and a conclusion section. For the type 2 and type 3 project, the project report should include an introduction, a section describing the tool or
methodology used, a section describing the examples developed, a result/outcome section, and a reflection/discussion/conclusion section. The reflection/discussion/conclusion section is an important section, which should describe what have been learned and/or discussion and evaluation of the tools that are used. For example, if your project is to develop an App based on tool or method, you need to put more emphasis on the software engineering aspect (e.g., evaluation of the development tool/method) instead of simply developing the App.

The project report will be 9-10 pages (Times New Roman, 12 font size, single space, and single column) excluding the cover pages.