

Software Engineering Education Framework

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Abstract. Software engineering guideline improving software quality and increasing productivity is needed in software project development. People knows that securing global software quality and contributing to improved software development productivity by applying SW engineering technology is important. The key is to make high quality software engineering experts, so, to do it , training course and education contents are core problems. In this paper, software engineering standard curriculum development is introduced. Software engineering standard curriculum presents the standard process for lectures, contents of software engineering education. Recently, as to the IT area, the complexity of the development system increases due to convergence and combination of software and hardware. In order to order to conclude the problem of that is new this type, software engineering technology is necessary. The technology includes not only all fields of system development but also management or the systematic area, and etc. In this paper, the standard curriculum for systematically teaching this kind of software knowledge was defined and the extent of knowledge by subject was defined. The software engineering curriculum is represented two dimensions as the knowledge list and learning level.

Keywords: SW Engineering, SW Development Process, SW Engineering Standard Curriculum

1 Introduction

According to be getting more complex and longer Software Project, it happen so many problem such as late delivery cost overrun, low quality, etc.

So Engineers have developed many methods, and tools to solve the problems. But, we know Software Engineering himself is most important. Because high quality Software Engineering makes high quality Software

Then, How to make good Software Engineering? What to learn Software Engineering.

In this paper we propose standard curriculum to be software engineering

2 Software Engineering List

Software knowledge list means basic frame and essential domain area of software engineering area

We separate 9 domain areas in Fig.1 that are necessary to learn software engineering

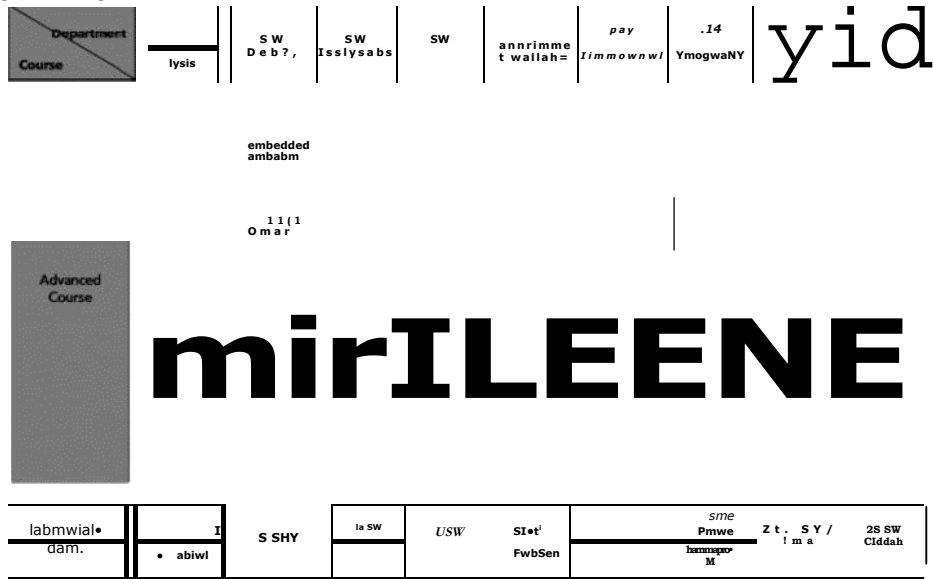


Fig. 1 Software Knowledge list

3 Software Engineering Curriculum

Fig.2 shows how the 9 knowledge areas are arranged and what contents are consisted of each domain.

And fig.2 shows systematical learning free for software education

The learning system for software engineering is represented by 2 dimensions; 3 levels(introduction course, intermediate course, advanced course) and 9 domains including 26 lectures.

| Knowledge Areas | Unit Topic | Knowledge items | Item Details |
|------------------------|---|---|---|
| SW Engineering Process | 8.1 concepts of SW engineering process | 8.1.1 type distinction of SW process | <ul style="list-style-type: none"> Classification of technical- models and meta-models |
| | | 8.12 characteristic of SW process | <ul style="list-style-type: none"> System process Software process |
| | | 8.L3 SW process Improvement | <ul style="list-style-type: none"> process assessment, certification, improvement |
| | 82 SW process Improvement and alteration management | 8.21 process Infrastructures | <ul style="list-style-type: none"> Expert Group, infrastructure, tools |
| | | 822 SW process Management Cycle | <ul style="list-style-type: none"> Management-cycle |
| | | 82.3 process Implements and alteration management model | <ul style="list-style-type: none"> QIP(Quality Improvement Paradigm) model IDEAL model |
| | | 82.4 process quality assurance hierarchy | <ul style="list-style-type: none"> SW management and quality assurance quality assurance organization |
| | | 831 SW development life -cycle model | <ul style="list-style-type: none"> explanation of SW development process models: waterfall, prototyping, incremental, spiral, v |
| | 8.3 definition of SW process | system life-cycle process model | <ul style="list-style-type: none"> system life-cycle process(convention, project based, project technic process) |
| | | 8.3.3 SW life-cycle process | <ul style="list-style-type: none"> basic, support, organization life-cycle process |
| | | 83.4 process application | <ul style="list-style-type: none"> process definition, process notation |
| | | 841 SW process evaluation model | <ul style="list-style-type: none"> continuous representation , staged representation crmini, spice, v certification, iso9003 |
| | 84 evaluation of SW process | 842 SW process evaluation method | <ul style="list-style-type: none"> process assessment, indicators capability level10—level5(cmmi) |
| | | 843 process improvement and assessment | <ul style="list-style-type: none"> assessment procedure, improvement activity |
| | | 8.51 SW product measurement | <ul style="list-style-type: none"> internal and external quality element measurement models |
| | 8.5 SW process and product measurement | 8.52 Quality of Measurement Result | <ul style="list-style-type: none"> quality of developer |
| | | 8.53 certification of SW quality system | <ul style="list-style-type: none"> ISO 900003 |
| | | 8.61 process measurement techniques | <ul style="list-style-type: none"> process assessment model |
| | 8.6 SW engineering process techniques | 8.62 process tools | <ul style="list-style-type: none"> outline of tool |
| | 8.7 SW engineering process tools | | |

Fig. 2 Software Engineering Standard Curriculum.

4 Conclusions

In this paper, we introduced software engineering standard curriculum development. Software engineering standard curriculum presents the standard process for lectures, contents of software engineering education. Recently, as to the IT area, the complexity of the development system increases due to convergence and combination of software and hardware. In order to order to conclude the problem of that is new this type, software engineering technology is necessary. The technology includes not only all fields of system development but also management or the systematic area, and etc. In this paper, the standard curriculum for systematically teaching this kind of software knowledge was defined and the extent of knowledge by subject was defined. The software engineering curriculum is represented two dimensions as the knowledge list and learning level.

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