



## MSDE Module Descriptor

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|--|---|---|
| <b>Module Title</b><br>Design of Machine Element   | <b>Module Code</b><br>MSDE 323                        | <b>Semester (Sem 1 / Sem 2)</b><br>Sem 1                                |
| <b>Credits</b><br>10   | <b>Level</b><br>5                                     | <b>Professor and email</b><br>Dong-Young JANG<br>dyjang@seoultech.ac.kr |
| <b>Delivery Method</b><br>Lectures and Projects  | <b>Delivery Location</b><br>SeoulTech,<br>Mugung Hall |   |
| <b>Module Synopsis</b><br><p>This module provides the student with abilities to work in teams and to communicate effectively as design engineers. Topics included are general methodology how to design engineering systems, the teamwork, and communication skills that will serve students in their capstone design classes and engineering careers. Assessment is through projects and assignments. Mid-term and final reports and presentation as well as short reports and presentation during class hours are considered for the assessment.</p>   |   |   |
| <b>Outline Syllabus</b><br><br><b>Introduction of course</b><br>Mechanical design problems and process. Team formation. Memo writing. Writing in groups<br><br><b>Design process</b><br>Concept generation. Product design phase. Product generation<br><br><b>Design evaluation phase</b><br>Product evaluation. Cost analysis. Practice prototyping operation and robust design. How to apply patent and write memo to management<br><br>This module aims to teach the teamwork and communication skills, to teach how to organize design process for new product, and to teach how to get information of patents and apply new patents. |   |   |



### Indicative Reading:

- 1) *The Mechanical Design Process* by David G. Ullman (McGraw-Hill 2004)
- 2) *Product Design and Development* by Karl T. Ulrich and Steven D. Eppinger (McGraw-Hill 2008)
- 3) *Engineering Design Methods* by Nigel Cross (Wiley , 2008)

| NOTIONAL STUDENT WORKLOAD  | Hours |
|--|-------|
| MODE OF DELIVERY (FT / PT / DL)  | FT    |
| Lectures   | 30    |
| Seminars   | 10    |
| Tutorials  |       |
| Laboratories/studios/practical   | 10    |
| Directed learning  | 15    |
| Independent Learning   | 30    |
| Work experience/fieldwork  |       |
| Other: eg formal presentation  | 5     |
| Total Workload<br>100 hours for a 10 credit module<br>200 hours for a 20 credit module | 100   |

### Module Outcomes

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|---------|---|
| KU1,2,3 | KU1. Apply advanced knowledge of the scientific and mathematical foundations of engineering to solve problems.<br>KU2. Perform comprehensive analysis of engineering systems.<br>KU3. Identify and utilise advanced methodologies to create solutions to a variety of engineering problems. |
| IPSA4,5 | IPSA4. Illustrate a range of solutions to advanced engineering problems.<br>IPSA5. Demonstrate the ability to solve advanced design problems and communicate the designs to a third party   |
| PVA2    | PVA2. Apply creativity in the development of solutions to standard engineering problems.  |
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Seoul National University of  
Science & Technology  
232 Gongneung-ro, Nowon-gu,  
Seoul 01811 Korea

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| <b>Assessments</b>           | <b>Assessment Type</b>  | <b>Weighting %</b> | <b>Midterm/interim/final</b> |
|------------------------------|---|--------------------|------------------------------|
| Course Work and Presentation | Assignments and short presentation                                  | 20                 |                              |
| Presentation                 | Midterm formal presentation with report<br>Miscellaneous class work | 30                 | Midterm                      |
| Quiz                         |   |                    |                              |
| Test                         |   |                    |                              |
| Laboratory                   |   |                    |                              |
| Exam                         |   |                    |                              |
| Presentation                 | Final Presentation and report                                       | 50                 | Final                        |