# Subject Description Form

| Subject Code | BME3S02 |
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| **Subject Title** | Assistive Technologies: Service learning towards the elderly and disabled |
| **Credit Value** | 3 |
| **Level** | 3 |
| **Pre-requisite / Co-requisite / Exclusion** | The subject is open to students from the Faculty of Engineering, School of Design, Department of Health Technology and Informatics, Department of Rehabilitation Sciences, School of Nursing as well as School of Optometry. |
| **Objectives** | To provide students with an understanding of how assistive technology (AT) can affect the function and independency of the elderly and disabled. This course aims to introduce students with basic understanding of AT service delivery, including interaction and communication with the needed individuals, considerations in technological interventions as well as outcome evaluations. |
| **Intended Learning Outcomes** | Upon completion of the subject, students will be able to: <br><br> a. Demonstrate an understanding of the linkage between the service learning activities and experience and the academic content of the subject <br> b. Articulate the challenges and difficulties faced by the elderly and disabled, and understand the impact and contribution of Assistive Technology on the quality of life of such individuals. <br> c. Confidently communicate effectively with the elderly and disabled to understand their needs. <br> d. Apply knowledge and skills relevant to the design, development, delivery and evaluation of AT service to the end-user. <br> e. Work effectively in teams to establish mutual respect and solve problems encountered in planning and delivering the service. <br> f. Reflect on the role and responsibilities both as a professional and as a responsible citizen; and <br> g. Demonstrate empathy for people in need and a strong sense of civic responsibility. |
| **Subject Synopsis/ Indicative Syllabus** | The syllabus of this course is divided into three part: <br><br> **Part 1: concept and practice of service learning:** <br><br> ▪ Principles, concepts and myths of service learning <br><br> ▪ Benefits of service learning to students, the university and the community <br><br> ▪ Ethical issues in service learning |

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| | <ul><li>Basic concepts and theories of social problems, developments and justice</li><li>Social responsibilities of global citizens as intellectuals and professionals</li><li>Proper attitudes and behaviors in service delivery</li><li>Developing a service project proposal/plan</li><li>Effective team work and problem solving skills in service-learning projects</li><li>Reflection as a tool for learning</li></ul>**Part 2: Discipline-specific concepts and practice:**<ul><li>Introduction and framework for Assistive Technology</li><li>Impact of Assistive Technology</li><li>Understanding the capabilities and limitations of the end users</li><li>Understanding of assessment methods and techniques for technology provision</li><li>Moral and ethical considerations concerning the use of assistive technology</li></ul>**Part 3: Project-specific training:**<ul><li>Concepts and design approach/considerations for developing/ customizing specific assistive technology devices for application</li><li>Communication with elderly and/or physically disabled individuals.</li><li>Needs assessment for end users</li></ul> |
| **Teaching / Learning Methodology** | **1. e-Learning Module (10 hours)**<br><br>In this part of the course, students are required to complete 10 hours of eLearning activities related to the basic concept and practice in service learning (prepared by the Office of Service Learning at PolyU). The contents of the e-Learning module include readings, exercise and assessments. Students are required to complete this part within the first four weeks of the semester in which they are taking the course.<br><br>**2. Discipline-specific lectures and seminars (9 hours)**<br><br>This part of learning will be conducted by the subject team. The aim is to provide students with an overview of what assistive technologies (AT) are, understand the framework involved in AT practice, and have understanding on various techniques used for conducting assessment/evaluation and technology provision.<br><br>**3. Project-specific lectures and seminars (6 hours)**<br><br>This part of learning will be conducted by the subject team or other speakers who have experience in providing/developing assistive technology devices. The content of these lectures and seminars aim to |

| | develop students with skills to communicate and understand the needs of the end user; to learn and familiarize with concepts and approach for AT design and customization, and to provide students with knowledge in consideration moral and ethical issues related to the prescription and use of assistive technologies. |
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| | **4. Service Learning projects**<br><br>Service learning projects involving real-world clients will be organized through special schools for the disabled, NGOs and other rehabilitation related organizations. During direct service rendering, students will be working in groups to tackle a specific need of the client that is presented to them. Students then will utilize their learned skills to analysis the situation and proposed a solution. Whenever feasible, the students will construct the assistive device for the user. During this learning process, students will work closely with the individual recipient and/or representative(s) from the front-line service agency under the supervision of the teaching team. Examples of projects included designing a device to facilitate daily activities; accessing computer; playing a musical instrument…etc. The outcome of these projects can also include conceptual designs of a complex device or a working prototype. Students are expected to spend about 30 hours of direct service rendering to the client. In between, students will have 60 hours to conduct background explorations and for the design/fabrication work and evaluation of their product.<br><br>**5. Reflective Journals, Project report and Review**<br><br>Students are required to write a personal reflective journal to reflect his/her experience gained during service delivery; their interaction with the recipient and his/her carer. A project report which documents the technical aspects of the assistive devices is required from each group. This report will summarize the design considerations/evaluations of the device and if needed, future development can be continued by another group of students. A presentation will be arranged at the end of the course to allow students to report and share their experience related to their projects. |

**Assessment Methods in Alignment with Intended Learning Outcomes**

| Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | | | |
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| | | a | b | c | d | e | f | g |
| e-Learning Module on service learning | 20% | √ | | | | | | √ |
| Class discussions, plans/proposals for service | 20% | √ | √ | | √ | √ | √ | |

| Assessment | Weighting | | | | | | | |
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| Performance in service delivery | 30% | | | √ | √ | √ | | √ |
| Reflective journal & report | 20% | √ | √ | | √ | √ | √ | √ |
| Project Presentation | 10% | √ | √ | | √ | √ | √ | √ |
| Total | 100% | | | | | | | |

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

To assess students understanding and performance, class discussions, case studies and project planning/proposal are used to measure students' understanding on issues related to commencing the targeted service learning program. Students' performance including ability to interact with recipients, linking academic knowledge to service-learning, demonstrating ethical and social responsibility will be continuously assessed by the teacher and their on-site supervisors during feedback meetings and reflective journals. Peer reviews will also be used as a measure to team building.

| **Student Study Effort Expected** | e-Learning Module | 10 Hrs. |
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| | Class contact: | |
| | ▪ Disciplinary specific Lectures and seminars | 9 Hrs. |
| | ▪ Project-specific seminars, tutorials and/or workshops | 6 Hrs. |
| | Other student study effort: | |
| | ▪ Rendering of service | 30 Hrs. |
| | ▪ Background exploration, design, fabrication or modification of AT device | 60 Hrs. |
| | ▪ Evaluation, Reflection and review | 20 Hrs. |
| | Total student study effort | 135 Hrs. |
| **Reading List and References** | ▪ Oishi, Meeko Mitsuko K, Design and use of Assistive Technology, Dordreht: Springer, 2010. | |
| | ▪ Cook A.M. and Hussey S.M., Assistive Technologies: Principles and Practice, Mosby, USA, 2008. | |

| | ▪ Christine M. Cress, Peter J. Collier, Vicki L. Reitenauer and Associates, Learning Through Serving – A Student Guidebook for Service-Learning Across the Disciplines, Sterling, Virginia, 2005.<br><br>▪ Oishi M.M.K., Mitchell I.M., Machiel Van der Loos H. F., (ed), Design and use of assistive technology: social, technical, ethical, and economic challenges. New York: Springer, 2010.<br><br>▪ Abdelsalam (Sumi) Helal, Mounir Mokhtari, Bessam Abdulrazak (ed), The engineering handbook of smart technology for aging, disability, and independence. Hoboken, N.J.: Wiley, c2008<br><br>▪ Arthur D. Fisk [et al.]. Designing for older adults: principles and creative human factors approaches. Boca Raton: CRC Press, c2004. |
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