# Introduction by Program

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### ○ Undergraduate

The undergraduate curriculum is designed to nurture knowledge on various materials properties by dramatically reducing the number of mandatory major course and broadening elective major courses, reflecting on the current trend in the diversity of material research. Especially, the curriculum is strengthened by the introduction of new courses such as nanomaterials science & technology, nano-biomaterials, polymer materials, nanomaterial processing simulation, and Circuits and Electronics System and expands the indirect experience in the field of future materials application. For the experiential education, both the experimental courses and internship programs at various high-tech companies are provided. Seven shared laboratories (analysis&instrumentation room, thin film room, clean room, materials characterizations room, TEM, SEM, Pilot Plant) are operated to provide hands-on experiences of the knowledge that is taught in classes. Meanwhile, for the flexibility on the management of the curriculum, minor major and double major program is also established.

### ○ Graduate

The graduate curriculum is aimed at fostering experts who can actively react to the dramatically changing research environment. graduate course curriculum requires the nurturing of creative problem solving skills in the professional field through completion of courses and thesis research.

The courses are aimed at providing the professional knowledge to understand and discuss the recently published research works, and they are composed of three parts in order to be equipped with various fundamental principles of materials science and engineering coupled with fundamental knowledge about basic principle and phenomenon. First, there are basic courses, including electronic structure of materials, crystal structure, defects, thermodynamics and phase equilibrium, phase transformation, mechanical properties, and electric properties. Second, there are engineering-based courses, such as processing, synthesis, and manufacturing of metal, ceramic, semiconductor and composite materials. Third, there are courses that deal with specific properties of various materials based on their unique characteristics and the principles and applications necessary to identify the microstructure and defects of various materials. The thesis research needs to be independent and creative, and should be of the quality that can be published in the internationally recognized professional journals. Additionally, the curriculum provides the opportunities to acquire the creative problem solving capability by providing the opportunity to get access to recent research works in various professional fields through the regular seminar by inviting experts from various research fields.