National Kaohsiung University of Applied Sciences
Mechanical Engineering Department, College of Engineering
Curriculum of Master's Program in Academic Year 2019

Passed at Department Curriculum Committee Meeting on 16 03, 22
Passed at Department Affairs Meeting on 14 02, 17
Passed at College Curriculum Committee Meeting on 16 03, 30
Passed at University Curriculum Committee Meeting on 14 04, 25
Passed at Academic Affairs Meeting on 14 05, 21

Year	1st academic year		2nd academic year	
Semester	Semester 1	Semester 2	Semester 1	Semester 2
Required courses	Seminar (1)1/2 Research Methodology(0 credit)	Seminar (2)1/2	Special topics (3)1/2	Special topics (4)1/2 Master thesis 6/6
Elective courses (Design and solid mechanics group)	Computer graphics 3/3 Finite Element Method 3/3 Computer aided engineering analysis 3/3 Design and analysis of robot mechanisms3/3 Stress Waves in Solids 3/3 Special Topics on Product Innovation and R & D Management 3/3 Hydrostatic Bearing Design for Machine Tools 3/3	Advanced Mechanism Design 3/3 Advanced Dynamics 3/3 Theory and design of gearing 3/3 Reliability Engineering 3/3 Taguchi quality design method 3/3 Computational dynamics 3/3 Computer Aided Geometric Design 3/3 Applied plasticity 3/3 Continuum mechanics 3/3 The mechanics of Elasticity 3/3 Theory and design of mechanisms 3/3 Technical Writing and Communication in English 3/3	Mechanics of vibration 3/3	Optimum Design 3/3
Elective courses (Precision manufacturing group)	Manufacturing System Engineering 3/3 Theory of Engineering System 3/3 Remote networked manufacture 3/3 Image processing and machine vision 3/3 Patent Strategy and Practice 3/3 Algorithms for Clustering Data 3/3 Special Topics on Virtual Reality Technology Application 3/3 Graphics user interface design and application of machine tool 3/3	Case-Based Reasoning 3/3 Computer-Integrated Manufacturing 3/3 Manufacturing System and Strategy 3/3 Design and analysis for nano-structure 3/3 Virtual Reality and Virtual Manufacturing 3/3 Comparative Study of Patent Dispute Cases 3/3 Special Topics on the Patent Design-Around 3/3	Product design and manufacture 3/3	Technology Development and Knowledge Management 3/3
Elective courses (Energy Engineering group)	Engineering analysis 3/3 Heat Transfer 3/3 Computational fluid dynamics 3/3 Quantum Mechanics 3/3 Polymer Processing 3/3 Multiphase flow 3/3 Safety engineering of pressure vessel 3/3 Convective heat transfer 3/3	Turbulent Flow 3/3 Viscous Flow 3/3 Micro Turbulent Theory 3/3 Renewable Energy 3/3 Multiphysics 3/3 Flat panel display technology and manufacturing 3/3 Principles of Refrigeration and Air-conditioning 3/3 Solar Engineering 3/3	Radial Heat Transfer 3/3 Micro Heat Transfer 3/3 Heat Transfer Enhancement 3/3	

Elective courses (Opto-Mechatromics and Control group)	Optoelectronic engineering 3/3 Linear Systems 3/3 Optimal Control 3/3 Mechatronics 3/3 Geometric optics 3/3 Special topics on microsystems 3/3 Special topics on microsensors 3/3 Special Topics on Micro Machining 3/3 Optical Illumination Systems 3/3 Principle of Mechatronics 3/3	Photo-electric inspection 3/3 Robust Control 3/3 Nonlinear Control 3/3 Electomagnetics 3/3 Dynamics of Mechatronic System 3/3 Artificial Neural Network 3/3 Vibration control 3/3 Digital Signal Processing 3/3 Digital Control 3/3 Advanced Electronics 3/3 Fuzzy System and Control 3/3	Micro-Sensor 3/3 Adaptive Control Systems 3/3 Special Topics on Laser Machining 3/3 Principle and Application of Piezoelectric Actuator 3/3 Advanced geometrical optics 3/3	Servo chip design 3/3 Variable Structure Control 3/3
Elective courses (Material and Nanotechnology group)	Manufacturing processes and equipments of semiconductor 3/3 Advanced Physical Metallurgy 3/3 Nanomaterials 3/3 Microsystem Engineering 3/3 Instrumental Analysis 3/3 Diffusion Theory 3/3 SEM (1) 3/3 Analysis of SEM 3/3 Ceramics Materials 3/3 Machining Process of MEMS 3/3	Lubrication theory 3/3 Micro Mechanics 3/3 Micro Machining Technology 3/3 Electronic Ceramics 3/3 Material of MEMS 3/3 Thermodynamics of Solid State 3/3 SEM (2) 3/3 Nanotechnology 3/3 Semiconductor Device and Material 3/3 Principle of Molding Equipment Design 3/3 Micro & Nano Fabrication and Measurement Technology 3/3 System design of mems 3/3	Theory of Material Fracture 3/3 Materials for photo-electric applications 3/3 X-Ray Diffraction Analysis 3/3 X-Ray Crystallography 3/3	
Elective courses (International group)	Computer aided design 3/3 Polymer Processing 3/3 Optimum Design 3/3 Manufacturing System Engineering 3/3 Product design and manufacture 3/3 Computer-Integrated Manufacturing 3/3 Reverse Engineering 3/3 Die & mold design 3/3 Knowledge Management 3/3 Operations Management 3/3 Machine Learning 3/3 Design of Production System 3/3 Micro Machining Technology 3/3 Special Topics on Materials 3/3 Theory and design of mechanisms 3/3 Machining Process of MEMS 3/3 Precision Metal Forming 3/3 Principle of Mechatronics 3/3	Research Methodology3/3 Mechatronics3/3 Management of Science and Technology 3/3 Finite Element Method 3/3 Systematic innovation methods 3/3 Quality Management 3/3 Control System Design and Simulation 3/3	Electronic Design 3/3 Circuit design 3/3 Optoelectronics Devices 3/3 Distribution Automation System 3/3 Robotics 3/3 Artificial Intelligence 3/3 Image Processing 3/3 Precision manufacturing 3/3	Optoelectronic engineering 3/3 Micro-electro-mechanical Systems Engineering 3/3

I. Remarks:

1. This curriculum is applied to students admitted in Academic Year 2019
2. Credit hours of each course (or total) are marked with “credit/hour.”
3. Elective courses: the courses listed in the table are planned courses, which will be offered based on practical needs.
4. For other relevant regulations, please refer to guidelines on master’s studies of the department (graduate institute).

II. Graduation requirements:

1. The minimal credit number for graduation is 35 :
   (1) 11 credits of required courses（including Master thesis 6 credits, based on the semester the thesis is presented,Seminar 4 credits）
   (2) 24 credits of elective courses (including courses taken at other departments or institutes as is specified by the department/institute)

III. Other requirements set by the department:

1. All elective courses for International group are in English