파 이 버 시 스 템 공 학 과

( DEPARTMENT OF FIBER SYSTEM ENGINEERING)

**1.Department Introduction**

The graduate courses for the department of fiber system engineering provide various technologies in convergence related to the advanced textile engineering and technology including IT, BT and NT.

The curriculum includes advanced yarn and filament spinning, yarn texturing, weaving and composites, textile machinery, advanced dyeing technology and advanced textile finishing technology and so on. The processing technology of each article mentioned above is also studied and analysed with various physical properties to enhance the quality of textile products.

The mission of the graduate course of department of fiber system engineering is to nurture human resources serving textile industries in domestic and abroad. The cooperative program between university and industry is also operated to provide creative human resources who contribute to the advanced textile industries. Also the standardized educational system is programmed to educate globally competitive human resources. Our graduate course provides the market oriented curriculum for specialized expertise to bring up advanced technological human resources with application capabilities and skills.

**2.교수진 (Faculty Members)**

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| 직 명 | 교수명 | 최종출신학교 | 학 위 | 전공분야 |
| Professor | Kim, Sam Soo | Seoul National Univ. | 공학박사 | Color Science and Dyeing Chemistry |
| Professor | Chun, Du Hwan | North Carolina State. Univ. | 공학박사 | Textile Machinery and Nonwoven |
| Professor | Lee, Joon Seok | Seoul National Univ. | 공학박사 | Weaving and Textile Composite |
| Associate Professor | Lee, Jae Woong | Auburn Univ.(Aulburn Main Campus) | 공학박사 | Textile Finishing and material Chemistry |
| Assistant Professor | Kim, Jong won | Yeungnam Univ. | 공학박사 | Spinning and Textile Processing |

**3.Academic programs**

**교과과정 (Curriculum)**

**Basic Major Courses**

섬유통계및계측학특론(TEXTILE STATISTICS AND INSTRUMENTATION)

섬유제조시스템설계특론(ADVANCED ENGINEERING SYSTEM DESIGN)

섬유염색가공특론(ADVANCED DYEING AND FINISHING FOR TEXTILES)

섬유물리화학특론(ADVANCED TEXTILE PHYSICS AND CHEMISTRY)

섬유공정설계특론(ADVANCED TEXTILE PROCESSING DESIGN)

섬유고분자재료특론(ADVANCED FIBER AND POLYMER MATERIALS)

분석화학및기기분석특론(ADVANCED ANALYTICAL CHEMISTRY AND INSTRUMENTAL ANALYSIS)

**4.Course Description**

섬유통계및계측학특론 3 credit

(TEXTILE STATISTICS AND INSTRUMENTATION)

Study (Lecture) of the SPSS Statistic Package related to the ordinary statistical data processing, ANOVA, Factor analysis and regression analysis. And each statistical concept of these methods is given with example problems and analysed with SPSS statistical package.

섬유제조시스템설계특론 3 credit

(ADVANCED ENGINEERING SYSTEM DESIGN)

Advanced engineering design introduces fundamental and applied knowledge to design elements of textile product and producing system, including design optimization through numerical analysis tools and subsequent creative and innovative design ideas.

섬유염색가공특론 3 credit

(ADVANCED DYEING AND FINISHING FOR TEXTILES)

This lecture provides processing technologies through the general understanding of dyeing and finishing process to enhance a high value added for textile products. In addition, this lecture deals with a new developed technologies related with a hybrid and super fiber materials and their products.

섬유물리화학특론 3 credit

(ADVANCED TEXTILE PHYSICS AND CHEMISTRY)

Advanced course for understanding the knowledge about structures, mechanical properties and viscoelastic properties of fibers, and the knowledge about relation between their structures and their properties.

섬유공정설계특론 3 credit

(ADVANCED TEXTILE PROCESSING DESIGN)

Textile process(spinning, weaving, knitting, non-woven manufacturing), characteristics of textile materials, textile materials property relationships between processing and fibrous materials, and textile materials applications and characteristics in industrial field.

섬유고분자재료특론 3 credit

(ADVANCED FIBER AND POLYMER MATERIALS)

The subject relates to polymeric materials to produce fibers which are issued in industrial fields. The manufacturing process, characteristics and applications of the polymeric materials will be studied in detail. This course deals with currently published papers and patents for the polymeric materials. Furthermore, novel applications using the polymeric materials are also considered.

분석화학및기기분석특론 3 credit

(ADVANCED ANALYTICAL CHEMISTRY AND INSTRUMENTAL ANALYSIS)

This course provides a background in analytical chemistry with an emphasis on instrumentation. Applications of instrumental analytical chemistry in polymers, textiles and materials science will be presented in detail. The objectives of the course are to introduce instrumental techniques for chemical measurement, to develop consideration for interpreting analytical data, and to select instrumentation appropriate to the measurement need.

개별연구(1) 3 credit

(INDEPENDENT STUDY 1)

This course is offered to make it possible for a master's degree student to thoroughly investigate a topic related to his or her research interest.

개별연구(2) 3 credit

(INDEPENDENT STUDY 2)

This course is offered to make it possible for a doctoral degree student to thoroughly investigate a topic related to his or her research interest.

파이버시스템공학과세미나 1 credit

(SEMINAR)

We select the theme throughout textile engineering and depending on the topic research, presentations and discuss.

편성공학특론 3 credit

(ADVANCED KNITTING FABRICS)

Study related to the manufacturing technology of knitted fabrics such as circular, weft-knit, and warp-knit. And the relationship between various knitting process parameters and physical properties of knitted fabrics with knit structure is lectured. Especially, the physical property of 3-dimensional warp knit fabric is studied with application of technical textile goods.

첨단복합소재융합기술 3 credit

(ADVANCED COMPOSITE MATERIAL TECHNOLOGY)

Study related to the yarn texturing technology such as draw texturing, interlacing and air jet textured yarn technology. DTY technology lecture includes belt, disk and pin type textured yarn technologies. ITY technology confers intermingling nozzle design and ATY texturing technology includes yarn structure and yarn physical property, in addition the relationship between texturing process parameters and yarn physical properties is lectured.

인간공학과기술 3 credit

(HUMAN ENGINEERING AND TECHNOLOGY)

Psychological principles in the design and evaluation of human/machine systems. Cognitive engineering approach and application of user-centered design principles.

염색화학특론 3 credit

(ADVANCED DYEING CHEMISTRY)

In order to exact understand of the dyeing phenomena, this lecture gives the purification methods of several kinds of commercial dyes, the purity identification of purified dyes and the measurement of dye concentration in dye bath. This subject will also present colloidally property related dye aggregation for water soluble and water insoluble dyes. In addition to these, the dyeing equilibrium and dyeing kinetics will be discussed as an important issues to figure out the dyeing theory.

스마트섬유특론 3 credit

(ADVANCED SMART TEXTILE)

Study related to the intelligent textiles and I.T related textiles applicable for wearable computers and medical hospital. And this lecture includes garment manufacturing technology related to the smart clothing for fashion and technical garments.

슈퍼소재융복합가공기술 3 credit

(SUPER FIBER CONVERGENCE FINISHING TECHNOLOGY)

This course considers dry and wet finishing technology for super textiles to provide functional properties in detail. Unlike textiles for regular applications, super textiles possess high tenacity, modulus and thermal resistant properties. Thus, this course will study specific textile finishing technologies for industrial applications in diverse fields.

슈퍼소재염색가공및제품화(1) 3 credit

(SUPER FIBER DYEING, FINISHING AND COMMERCIALIZATION 1)

This lecture deals with the preparation methods and dyeing & finishing processes of super fibers used in the field of technical textile.In particularly, this subject relates to the recent dyeing & finishing technologies under consideration of physical-chemical properties of super fibers and the application methods which can be used in various fields.

슈퍼소재염색가공및제품화(2) 3 credit

(SUPER FIBER DYEING, FINISHING AND COMMERCIALIZATION 2)

This lecture deals with the preparation methods and dyeing & finishing processes of super fibers used in the field of technical textile.In particularly, this subject relates to the recent dyeing & finishing technologies under consideration of physical-chemical properties of super fibers and the application methods which can be used in various fields.

슈퍼소재섬유제조및응용(1) 3 credit

(SUPER FIBER PROCESSING AND APPLICATION 1)

Study related to the manufacturing technology of fibre(filament), yarn, fabric, knitting and 3D-fabrics for technical textile goods. And introduce the measurement method of the physical properties of the technical textile goods and give the case study for application in the industry.

슈퍼소재섬유제조및응용(2) 3 credit

(SUPER FIBER PROCESSING AND APPLICATION 2)

Relationship between processing conditions of looms and physical properties of the super fiber woven fabrics, principles of weaving mechanism, trouble shooting and the solutions in weaving processing, singular weaving method for industrial super fiber woven fabrics, and the present conditions of several weaving machines.

슈퍼소재복합재료(1) 3 credit

(SUPER FIBER REINFORCED COMPOSITES 1)

The process and properties of super fiber reinforced thermoset composites and survey and discussing recent super fiber reinforced thermoset composites papers.

슈퍼소재복합재료(2) 3 credit

(SUPER FIBER REINFORCED COMPOSITES 2)

The process and properties of super fiber reinforced thermoplastic composites and survey and discussing recent super fiber reinforced thermoplastic composites papers

슈퍼섬유전산구조설계 3 credit

(CAE FOR SUPER FIBER)

Advanced finite element method studies fundamental and applied knowledge of finite element method to solve various engineering problems, including Raleigh-Ritz method, 1D and 2D stress/strain analysis and its application, basics of 3D analysis, and transfer matrix method etc. to simulate the material behavior of different textile product and analyze the textile system.

섬유형성공학특론 3 credit

(ADVANCED FIBER FORMATION)

Advanced course for the material properties in fiber forming. Study the measurement method for the preparation of fibers and the principle of fiber formation. Understanding the priciple of converting polymers to fibers based on rheology.

섬유복합재료특론 3 credit

(ADVANCED FIBER REINFORCED COMPOSITES)

The characteristics and processing of super fibers used in fiber reinforced composites, the macromechanics and micromechanics theories of fiber reinforced composites, and the impact properties and fatigue properties of fiber reinforced composites.

색채과학특론 3 credit

(ADVANCED CHROMATICS)

In order to understand the Chromatics, this lecture gives the expressions of color, three color principles, color coordinates(XYZ, L\*A\*B\*, L\*C\*H, Hunter's), color meserments, and the spectrophometeric color characteristics. The color control in dyeing industry fileld, the calculation of color difference, and color mixture metods will be discussed in this subject. In addition to above themes, the aplication technology of the CCM and CCK to apply the digital dyeing technoloigy will also be studied.

부직포공학특론 3 credit

(ADVANCED NONWOVENS PROCESSING)

An in-depth understanding of the mechanisms and processes used in the production of nonwoven materials. Design and operation of these mechanisms and processes. Process flow, optimization of process parameters, influence of process parameters on product properties.

메디칼텍스타일특론 3 credit

(ADVANCED MEDICAL TEXTILE)

Study related to the medical textile manufacturing technology such as fibre, yarn, fabric, knitting and nonwoven and the lecture related to the end-uses and physical properties of medical textiles is given. The manufacturing technologies of medical textiles applied with information and nano technologies are lectured with its physical properties.

디지털섬유제조및응용기술 3 credit

(DIGITAL TEXTILE MANUFACTURING & APPLICATION TECHNOLOGY)

Textile was used in diverse area not only in garment but also industrial applications. Hence, intensive development has been preceded for novel textiles. Because hybridization between textile and IT has been accelerated, conductive textile was developed effectively and transistor and circuit could be consisted on fabrics. In this lecture we can learn hybridization of textiles and IT and novel applications of the hybrid technology.

고분자물리 3 credit

(ADVANCED POLYMER PHYSICS)

Understanding the knowledge about polymer chains and their characterization, the knowledge about structures and properties of polymeric materials, the knowledge about transition phenomena for crystalline polymers. Lecture the crystal formation and orientation them in polymer solution. Study of the relationship between polymer structure and physical properties

감성소재물성학 3 credit

(PHYSICAL PROPERTY FOR EMOTIONAL TEXTILE MATERIALS)

Study of physical properties of the clothing materials such as garment formability, sewability, breathable and various wearing properties. The lecture related to the physical properties of the sports fabric materials such as quick dry, stretchable, and breathable fabrics is given. And comfortable properties of garment such as thermal and wearable comforts are lectured, and sewing technology is also studied.

탄소소재공학특론 3 credit

(ADVANCED CARBON MATERIALS ENGINEERING)

Carbon materials are manufactured in various fiber forms and are used in various fields. Aims of this lecture is to understand how to manufacture and apply fiber using carbon materials (carbon black, activated carbon, graphite, CNT, fullerene, graphene, carbon fiber, etc.) and how to use carbon materials.