

4 Years Structure

Industrial Design Program

School of Architecture and Design, KMUTT

Name of Program

Bachelor of Fine and Applied Arts Program in Industrial Design (International Program)

Degree

Full name: Bachelor of Fine and Applied Arts (Industrial Design)

Abbreviate name: B.F.A. (Industrial Design)

Objectives

- The purpose of program is to educate professional industrial designers:
- who understand the human centered design philosophy and have ability to implement it in design.
- have broad perspective to design of products and services.
- with sense of responsibility and awareness towards environment and society.
- able to work with international organizations.
- To build on students natural abilities and interests in the field of design
- To provide possibility to continue their studies in further academic levels.
- for the needs of creative economy in Thailand and elsewhere.
- To generally contributing to the development of human kind and improvement of quality of life.

Program Duration

Required credits for full-time program have to be completed within a period of 4 academic years or 8 semesters, but not to exceed 8 academic years or 16 semesters.

Industrial Design Program

Curriculum

Total Program Credits 149 credits

General Education Courses 31 credits

- Health Courses 1 credit
- Integrative Courses 15 credits
- Language Courses 9 credits
- Elective Courses not less than 6 credits

Major Courses 112 credits

- Industrial Design Fundamental Courses 53 credits
- Industrial Design Practice Courses 47 credits
- ID Electives not less than 12 credits

Free Elective Courses not less than 6 credits

Industrial Design Program

Year 1

First Semester		
Code	Course	Credit*
IND 101	Industrial Design Fundamentals	4(2-4-8)
IND 111	Industrial Design Illustration	3(1-4-6)
IND 122	Introduction to Art	3(2-2-6)
LNG 221	Academic English in International Contexts	3(3-0-6)
GEN 121	Learning and Problem Solving Skills	3(3-0-6)
GEN 231	Miracle of Thinking	3(3-0-6)
Total		19(14-10-38)

Second Semester		
IND 102	Industrial Design and Manufacturing	4(2-4-8)
IND 112	Materials and Manufacturing Processing	3(3-0-6)
IND 113	Communication for Manufacturing	3(1-4-6)
IND 125	Application of Form Design Variables	3(1-4-6)
LNG 222	Academic Listening and Speaking in International Contexts	3(3-0-6)
GEN 111	Man and Ethics of living	3(3-0-6)
GEN 241	Beauty of Life	3(3-0-6)
Total		22(16-12-44)

Year 2

First Semester		
IND 123	Design History and Culture	3(2-2-6)
IND 201	Industrial Design and Human Factors	4(0-8-8)
IND 217	Physical Human Factors	2(2-0-4)
IND 218	Psychological and Cognitive Human Factors	2(2-0-4)
IND 219	Social and Cultural Human Factors	2(2-0-4)
IND 223	Research for Design	3(2-2-6)
Total		16(10-12-32)

Second Semester		
IND 202	Industrial Design and Business	4(1-6-8)
IND 214	Marketing and Economics	3(3-0-6)
IND 226	Information Design	3(2-2-6)
IND 227	Advanced Human Factors	3(3-0-6)
LNG 321	Academic Reading and Writing in International Contexts	3(3-0-6)
IND xxx	Industrial Design Elective	3(x-x-x)
Total		19(x-x-x)

Year 3

First Semester		
IND 301	Collaborative Product Development I	6(0-12-12)
IND 321	Sustainable Design	3(2-2-6)
GEN 351	Modern Management and Leadership	3(3-0-6)
IND xxx	Industrial Design Elective	3(x-x-x)
XXX xxx	Free Elective	3(x-x-x)
GEN xxx	General Education Prescribed Elective	3(x-x-x)
Total		21(x-x-x)

Second Semester		
IND 302	Collaborative Product Development II	6(0-12-12)
IND 322	Design and Society	3(2-2-6)
GEN 101	Physical Education	1(0-2-2)
IND xxx	Industrial Design Elective	3(x-x-x)
XXX xxx	Free Elective	3(x-x-x)
GEN xxx	General Education Prescribed Elective	3(x-x-x)
Total		19(x-x-x)

Summer Semester		
IND 303	Industrial Design Internship	2(S/U)
Total		2(S/U)

Year 4

First Semester		
IND 401	Collaborative Product Development III	6(0-12-12)
IND 421	Creative Entrepreneurship	3(2-2-6)
IND 424	Envision the Future Scenarios to Design	3(2-2-6)
IND 425	Industrial Design Comprehensive Project Preparation	2(1-2-4)
IND xxx	Industrial Design Elective	3(x-x-x)
Total		17(x-x-x)

Second Semester		
IND 402	Industrial Design Comprehensive Project	9(0-18-18)
IND 423	Seminar	2(2-0-4)
IND 426	Moral, Legal and Professional Practice	3(3-0-6)
Total		14(5-18-28)

*Credit = Credit Hour (Lecture-Practice-Self Study)

Course Description

General Education Courses 31 Credits

Required Courses 25 Credits

Health Courses 1 Credit

GEN 101 Physical Education 1 (0-2-2)

Prerequisite: none

This course aims to study and practice sports for health, principles of exercise, care and prevention of athletic injuries, and nutrition and sports science, including basic skills in sports with rules and strategy from popular sports. Students can choose one of several sports provided, according to their own interest. This course will create good health, personality and sportsmanship in learners, as well as develop awareness of etiquette of playing, sport rules, fair play and being good spectators.

Integrative Courses 15 Credits

GEN 111 Man and Ethics of Living 3(3-0-6)

Prerequisite: none

This course studies the concept of living and working based on principles of religion, philosophy, and psychology by fostering students' morality and ethics through the use of knowledge and integrative learning approaches. Students will be able to gain desirable characteristics such as faithfulness, social responsibility, respect of others, tolerance, acceptance of differences, self-discipline, respect for democracy, public awareness, and harmonious co-existence.

GEN 121 Learning and Problem Solving Skills 3(3-0-6)

Prerequisite : None

This course aims to equip students with the skills necessary for life-long learning. Students will learn how to generate positive thinking, manage knowledge and be familiar with learning processes through projects based on their interest. These include setting up learning targets; defining the problems; searching for information; distinguishing between data and fact; generating ideas, thinking creatively and laterally; modeling; evaluating; and presenting the project.

GEN 231 Miracle of Thinking 3(3-0-6)

Prerequisite: none

This course aims to define the description, principle, value, concept and nature of thinking to enable developing students to acquire the skills of systematic thinking, systems thinking, critical thinking and analytical thinking. The Six Thinking Hats concept is included. Moreover, idea connection/story line and writing are explored. Examples or case studies are used for problem solving through systematic thinking using the knowledge of science and technology, social science, management, and environment, etc.

GEN 241 Beauty of Life 3(3-0-6)

Prerequisite : None

This course aims to promote the understanding of the relationship between humans and aesthetics amidst the diversity of global culture. It is concerned with the perception, appreciation and expression of humans on aesthetics and value. Students are able to experience learning that stimulates an understanding of the beauty of life, artwork, music and literature, as well as the cultural and natural environments.

GEN 351 Modern Management and Leadership 3(3-0-6)

Prerequisite: none

This course examines the modern management concept including basic functions of management—planning, organizing, controlling, decision-making, communication, motivation, leadership, human resource management, management of information systems, social responsibility—and its application to particular circumstances.

Language Courses 9 Credits

LNG 221 Academic English in International Contexts 3(3-0-6)

Prerequisite: none

The course aims at developing the confidence and academic English skills necessary for learners in an international program .The learning and teaching involves the integration of the four language skills, thinking skills and autonomous learning .In terms of reading, the course focuses on reading for main ideas, summarizing skills, critical reading and interpretation skills through the use of real-world content .In terms of writing, the emphasis is on process writing and academic writing to enable learners to effectively use the information gained from reading to support their statements .In terms of speaking, the focus is on sharing opinion and exchanging information on issues related to the learners' content areas or their field of interest .In terms of listening, the focus is on listening to English talks and taking notes from authentic input.

LNG 222 Academic Listening and Speaking in International Contexts 3(3-0-6)

Prerequisite: none

This course aims at developing confidence and academic listening and speaking skills necessary for learners in an international program .The teaching and learning styles involve an integration of English into learners' content areas to enable them to think critically and communicate effectively .Learners will be able to listen to extended speech and lectures in their fields, share ideas and express opinions, conduct an interview for professional, collect data and present a survey project.

LNG 321 Academic Reading and Writing in International Contexts 3(3-0-6)

Prerequisite : LNG 222

The course aims at developing confidence and academic reading and writing skills necessary for learners in an international program. The teaching and learning styles involve an integration of English into learners' content areas to enable them to read academic articles in their chosen fields. Learners will be able to extract main points from the text, purposefully select required information to support their writing, write different forms of reports in their fields, use information obtained from reading and their own experience in writing an essay, and effectively use references and citations throughout the writing process.

Elective 6 Credits

Select from GEN xxx courses or LNG xxx courses

Major Courses 112 Credits

Industrial Design Fundamental Courses

53 Credits

IND 111 Industrial Design Illustration 3(1-4-6)

Prerequisite: none

Various techniques and media of industrial design sketching and drawing.

IND 112 Materials and Manufacturing Processing 3(3-0-6)

Prerequisite: none

Wood, plastics, metals and composites in design. History of materials. Material properties. Manufacturing processes related to the materials. Design applications.

IND 113 Communication for Manufacturing 3(1-4-6)

Prerequisite: none

Industry-standard technical communication for manufacturing. Drawing with conventional media and computer-aided design software for communicating design and related technical details.

IND 122 Introduction to Art 3(2-2-6)

Prerequisite: none

A broad introduction to the nature, vocabulary, media and history of art. The chronological history of western art lecture from the early time to present. Exploration of knowledge via various projects and approaches from two dimensional, three dimensional and other artistic explorations and approach within students own frame and reference. Art's relationship to the audience, to the artist's intention, to beauty, and to the society it was created.

IND 123 Design History and Culture 3(2-2-6)

Prerequisite: none

Design history and culture. Diversities of geographical setting, natural resources, culture, religion, economical status of each country influenced onto designs. Paradigm shifts in design movements. Effects of design on society and culture. Effects of society and culture on design. Impact of industrial design on Asian societies.

IND 125 Application of Form and Design Variables 3(1-4-6)

Prerequisite: none

Principles of design. Design variables. Form design for product usability. Form design for product affordance. Form design for group identity and meaning. Form design and product branding.

IND 214 Marketing and Economics 3(3-0-6)

Prerequisite: none

Basics of Economics. Macroeconomics. Microeconomics. Demand and supply chain. Basics of marketing. Marketing research. Marketing planning. Business planning for products and services.

IND 217 Physical Human Factors 2(2-0-4)

Prerequisite: none

Introduction of the broad context of ergonomics as it applies to the design and development of products. Basic understanding of the dimensions and movement of the human body as an essential preliminary to the design of all artifacts for human use. Static and dynamic Anthropometry. Applications of anthropometric to product design. Human characteristics and behavior applied to design of products, system, their operating, and the environment. Effects of stress, fatigue, comfort, and other dynamic factors associated with human effort in the use of products.

IND 218 Psychological and Cognitive Human Factors 2(2-0-4)

Prerequisite: none

Psychological and cognitive human factors in design. Perception, sensory and interaction. Learning process. Cognition. Memory. Motivation. Emotion. Attitude. Personality. Application of appropriate research, design and user testing for interface and interaction design.

IND 219 Social and Cultural Human Factors 2(2-0-4)

Prerequisite: none

Social and cultural human factors in design. Social and cultural theoretical approaches and frameworks for design. Socio-cultural meaning through human possession and their interaction with products. Relationship between socio cultural context and users behaviors when selecting and using products. Design research framing based on socio-cultural concerns.

IND 223 Research for Design 3(2-2-6)

Prerequisite: none

Research for design and human factor subjects. Quantitative and qualitative research methodology, methods and techniques. Research process: research planning, data collection, analysis, research communication and research report.

IND 226 Information Design 3(2-2-6)

Prerequisite: none

The Art and Science of creating information and design presentations. How to create effective visual expression in every design states: ideas generation, ideas into informative graphics translation, sketch and diagram, and design presentation slides creation.

IND 227 Advanced Human Factor 3(3-0-6)

Prerequisite: none

Advance knowledge in 3 Human Factors for complex system or context: (1) physical human factors/ergonomics with an interdisciplinary concern in interaction of performance and behavior with design factors in public and environment (2) psychological and cognitive human factors in design and (3) socio-cultural macro environment study. Application of those knowledge and principles integrally for design research plan and acquisition for users' needs and stakeholders' requirement. User/stakeholder testing based on the integration of three areas of Human Factors principles.

IND 321 Sustainable Design 3(2-2-6)

Prerequisite: none

Principles of Sustainability: Planet, People and Profit. Importance of sustainable development. Roles and responsibility as individuals and designers towards sustainable development. Different sustainable design approaches. Application of sustainable design knowledge into practice. Stages of product life cycle. Effects of product life. Product analysis. System thinking.

IND 322 Design and Society 3(2-2-6)

Prerequisite: none

The relationship between design and its impact upon the society. The design that is driven by social issues, social problems or community. The social design case study integrated with hand on class project and field researches.

IND 421 Creative Entrepreneurship 3(2-2-6)

Prerequisite: none

Starting and running design business. Creative economy. Characteristics and opportunities of design-driven business. Business planning. Investment. Research and development. Manufacturing. Logistics. Marketing. Distribution. Communication to customers. Red ocean, blue ocean and white ocean business. Social responsibility. Work moral and ethics.

IND 423 Seminar 2(2-0-4)

Prerequisite: none

Critical thinking related to design professional, contemporary design issues, ethics, economy, politics, technology and culture.

IND 424 Envision the Future Scenarios to Design**3(2-2-6)**

Prerequisite: none

Opportunities searching for innovation aligned strategically with the complex and dynamic forces that drive change in the future (i.e., social, economic, political, environmental, technological). Design methods and tools that help envisioning/shaping futures defined by uncertainty and user/people insight and behaviors change.

IND 426 Moral, Legal and Professional Practice**3 (3-0-6)**

Prerequisite: none

Role and responsibility of designer. Laws, rules and regulations for design profession. Industrial design professional practice and culture.

Industrial Design Practice Courses 47 Credits**IND 101 Industrial Design Fundamentals 4 (2-4-8)**

Prerequisite: none

Purpose and importance of design. Industrial design processes: work management, research for design, specification of design outcome, idea generation, concept development, design evaluation, decision making, and communication of design. Tools and techniques for design. Drawings. Mock-up and model making. Design for aesthetics: form, size, proportion, color and material.

IND 102 Industrial Design and Manufacturing**4(2-4-8)**

Prerequisite: none

Industrial design project for manufacturing. Product development. Materials and manufacturing processes. Communicating design, materials and manufacturing processes.

IND 201 Industrial Design and Human Factors**4(0-8-8)**

Prerequisite: none

User-centered design project. Application of physical, psychological, cognitive, social and cultural human factors in design processes: user research, finding design opportunities, design concept and development, and design validation. Communicating design for functionality, usability, suitability, feasibility and desirability.

IND 202 Industrial Design and Business**4(0-8-8)**

Prerequisite: none

Marketing-focused design project. Application of business and marketing knowledge to market-driven design development. Communicating competitive product and service design.

IND 301 Collaborative Product Development I 6(0-12-12)

Prerequisite: IND 101, IND 102, IND 201, IND 202

Project based learning. Practice with real design work in terms of knowledge, methods and tools.

Collaborative design projects with external partners. Multidisciplinary work. Various possible project topics, scope of work and stages of design.

IND 302 Collaborative Product Development II 6(0-12-12)

Prerequisite: IND 301

Project based learning. Practice with real design work in terms of knowledge, methods and tools. Collaborative design projects with external partners. Multidisciplinary work. Various possible project topics, scope of work and stages of design.

IND 303 Industrial Design Internship 2(S/U)

Prerequisite: IND 302

Supervised field experience in industrial design offices. Understanding the practice of industrial design. Minimum of 8-week -full-time internship in industrial design or relevant design office, R&D department, or relevant research project.

IND 401 Collaborative Product Development III 6(0-12-12)

Prerequisite: IND 302

Project based learning. Practice with real design work in terms of knowledge, methods and tools. Collaborative design projects with external partners. Multidisciplinary work. Various possible project topics, scope of work and stages of design.

IND 402 Industrial Design Comprehensive Project 9(0-18-18)

Prerequisite: IND 401

Student initiated 1-semester design project. Demonstration of mastering the design knowledge, processes and skills. Ability to work independently. Project documentation. Self-evaluation.

IND 425 Industrial Design Comprehensive Project Preparation 2(1-2-4)

Prerequisite: IND 302

Preparation for IND 402 Industrial Design Comprehensive Project. Design research to identify project topic and scope. Project planning. Initiation of design statement.

Industrial Design Elective Courses 12 credits

IND 231 Design for Competition 3(2-2-6)

Prerequisite: none

Purpose of design competition. Types of design competitions. Design competition guidelines. Creating competition entry. Communicating design.

IND 232 Craft Product Design 3(2-2-6)

Prerequisite: none

Principles of handicraft and industrial craft design. Aesthetics, values, design and making processes of handicrafts. Exploration of materials and techniques.

IND 233 Illustration 3(1-4-6)

Prerequisite: none

Illustration methods and techniques. Usages of illustration as art form and practical applications in design.

IND 234 Sculpture 3(1-4-6)

Prerequisite: none

Methods and materials for red ocean, blue ocean and white ocean business. making.

Traditional sculpturing. Contemporary sculpturing.

Experimental sculpturing. Hands-on activities.

Applying design skills to sculpturing.

IND 252 Advanced Materials and Manufacturing Processing 3(2-2-6)

Prerequisite: none

A continuation from IND 112 Material and Manufacturing Processing. Natural materials: wood, glass, ceramics, leather, fiber and textile. History of materials. Material properties. Traditional and experimental manufacturing processes and design applications.

IND 254 Packaging Design 3(2-2-6)

Prerequisite: none

Theory and practice of packaging design. Graphics on packaging. The relationship between product, package, display and user. Technology and production for packaging design.

IND 255 Model Making 3(1-4-6)

Prerequisite: none

Prototyping product concepts for design development and communication. Materials and techniques of model making. Types of model: mock-ups, models and prototypes. Workshop safety.

IND 256 Special Topic Study I 3(1-4-6)

Prerequisite: none

Special study about up-to-date industrial design topic.

IND 257 Special Topic Study II 3(1-4-6)

Prerequisite: none

Special study about up-to-date industrial design topic.

IND 258 Application of Color 3 (2-2-6)

Prerequisite: none

Principles, theories and systems of color. Color and psychology. Color and human perception. Trend and color. Application in Design.

IND 259 Exhibition Design 3(1-4-6)

Prerequisite: none

Types and purposes of exhibition and display. Principles of exhibition and display design. Exhibition and display design in a scope of industrial design. Human-centered exhibition and display design.

IND 331 Independent Study I 3(1-4-6)

Prerequisite: none

Study and exploration on a special study topic of the faculty's and the students' mutual interest.

IND 334 Independent Study II 3(1-4-6)

Prerequisite: none

Study and exploration on a special study topic of the faculty's and the students' mutual interest.

IND 336 Toy Design 3(2-2-6)

Prerequisite: none

Toy design for different age groups of children. Types of toy. Children development.

Research, design and manufacturing for toys. Rules and regulations regarding toy safety. Toy testing. Current market trend.

IND 337 Textile Product Design 3(2-2-6)

Prerequisite: none

Basic knowledge and application of textiles and fibers. Characteristics and properties.

Surface treatment and decoration. Printed textiles design. Three dimensional construction product using textile materials and techniques. Basic textile assembly techniques. Design briefs in textiles design projects. Trend and target groups understanding for textile product design.

IND 338 Furniture Design 3(1-4-6)

Prerequisite: none

Furniture design in scope of industrial design. Furniture design and manufacturing process. Function and Aesthetics.

IND 339 Photography 3(1-4-6)

Prerequisite: none

Principles of Photography. Processes of Photography. Tools and techniques exploration. Artistic and aesthetic self-expression through photography.

IND 347 Applied Product Graphics 3(1-4-6)

Prerequisite: none

Graphic design on software and hardware products. Two and three dimensional graphics. Graphics on packages. Product brand, identity, image, styles, form and functionality in product graphic design.

IND 355 Computer-Aided Media 3(1-4-6)

Prerequisite: none

Computer as a tool for idea generation, design development and design communication via various kinds of media: still image, motion picture, light and sound.

IND 356 Computer-Aided Industrial Design 3(2-2-6)

Prerequisite: none

Computer software for product design and development. Basic and advance techniques for three dimensional modeling. Computer-software-generated image production technique.

IND 357 Computer-Aided Engineering I 3(2-2-6)

Prerequisite: none

Finite element analysis method and computer simulation. Simulating product test using computer aided engineering software: basic mechanism simulation, material stress analysis and vibration analysis.

IND 358 Computer-Aided Engineering II 3(2-2-6)

Prerequisite: none

Nonlinear analysis in finite element analysis and computer simulation. Simulating product test using computer aided engineering software: heat transfer, fluid dynamics analysis and product fatigue analysis.

IND 359 Product Life-Cycle Analysis 3(2-2-6)

Prerequisite: none

Product life-cycle analysis. Sustainability assessment. Life-cycle modelling. LCA Software tools. Application to design.

IND 363 Quantitative Research 3(2-2-6)

Prerequisite: **IND 223 Research for Design**

Quantitative research methods and analysis procedure. Statistical analysis tools for quantitative data related to design issues: product and brand positioning, user segmentation and trade-off analysis.

IND 364 User Research 3(2-2-6)

Prerequisite: **IND 223 Research for Design**

Perspective and skills development for conducting user research: user's lifestyle, attitude and behavior. Qualitative research approach: participatory research and ethnographic research. Techniques and tools for information gathering and interpretation.

CMD 365 User Testing 3(2-2-6)

Prerequisite: **IND 223 Research for Design**

User testing for hardware and software design evaluation. Techniques and tools such as structured interview and task performance with a live system or a prototype. Application to design selection and development.

IND 371 Service Design 3(2-2-6)

Prerequisite: none

Designing total experience of customers/people in commercial or non-commercial projects that required strategies to attract, engage, and enhance the interaction satisfaction between service providers and customers. Application of systematic approach to creative thinking methods and tools for identifying the relationship among activities, infrastructure, and product or communication channels for designing pleasant service experience.

IND 372 Product Styling 3(2-2-6)

Prerequisite: none

Factors of product styling direction. Relationship between product styling and marketing. User perception towards different product styles. Using Design elements to create emotional value through product styling.

IND 373 Advanced Presentation 3(2-2-6)

Prerequisite: none

Understanding and proficiency in the creation and delivery to a professional presentation utilizing English verbal, written and graphic media. How to present and conduct themselves as a professional industrial designer through non-verbal presentation and personality.

IND 374 Understanding Manufacture 3(2-2-6)

Prerequisite: none

Understanding Designer's Profession duty that collaborative with manufacturer and engineer in the process of product design and development thorough understanding of people in social perception.

IND 375 Advanced Design Research 3(2-2-6)

Prerequisite: none

Design research methodology ranging from framing questions to information acquiring. Information, analysis, synthesis and evaluation. Identification of design opportunity for future scenario and contextual changes

IND 431 Behavioral Analysis and Design 3(2-2-6)

Prerequisite: none

Human perceptual, cognitive and behavioral reactions. Human interactions with machines, product and environments. Application to design.

IND 433 Interface Design 3(2-2-6)

Prerequisite: none

Principles and methods for interactive product and interface design. Focusing on usability, effectiveness, engagement and user needs when interacting with artifacts and systems.

IND 434 Human-Product Interaction Design 3(1-4-6)

Prerequisite: none

Design for human physical interaction with complex systems. Software and electronic hardware as tools for human-product relationship analysis and cognitive models. Application to human-product interaction design.

IND 435 Product Form and Surface 3(1-4-6)

Prerequisite: none

Nonlinear analysis in finite element analysis and computer simulation. Simulating product test using computer aided engineering software: heat transfer, fluid dynamics analysis and product fatigue analysis.

IND 436 Programming for User Interface 3(2-2-6)

Prerequisite: none

Product interface programing. Appropriate programming language. Computer application development and programming. Application to design.

IND 437 Programming for Embedded System 3(2-2-6)

Prerequisite: none

Quantitative research methods and analysis procedure. Statistical analysis tools for

quantitative data related to design issues: product and brand positioning, user segmentation and trade-off analysis.

IND 465 Product Characteristics 3(2-2-6)

Prerequisite: none

Analysis of products serving same function in terms of product attributes, product properties, product appearance, product identity, product differentiation, manufacturing, marketing, consumers, design direction, tradition and culture influencing design. Application to design.

IND 467 Consumer Trend and Lifestyle 3(2-2-6)

Prerequisite: none

Consumer trend forecasting and lifestyle study. Global and local focus. Identifying design opportunities.

Free Electives Not less than 6 Credits