

## Statistics and Computer Science

### Introduction

Along with technological growth of computer at present, statistical technique becomes a tool which is widely used by many people to finish the problems better, such as problems in management area, research, business, marketing, quality operation, best quality, forecast, risk analysis of consumer satisfaction, environment, and others make the contribution of Statistics and Computer Science is progressively growing important. The combination of two study majors into one program is designed to maximize the learning opportunities for the student who chooses the double majors. To give working experience for student, we provide the facilities to practice in industry for 1 semester in national and international companies besides 4.5 years they study on campus. We facilitate student to job training at industry, research with industry and entrepreneurship program.

### Vision

A world class department in Computational Statistics based on ICT.

### Mission

The mission of Statistics and Computer Science Program is to contribute to the global community through the provision of world-class education by:

1. Educating students with fundamental knowledge & skills to apply Computational Statistics using ICT in acquiring business information for a career as a market researcher or business analyst;
2. Providing solid learning experience through creating the most creative and value-added talents of leaders for global community as well as conducting professional services to improve the quality of life;
3. Providing high impact research that positively contributing to the quality of life in Indonesia and the international community.

### Program Objective

The objectives of program are:

1. To provide students with a solid knowledge ranging from Fundamental Statistics and Computer Science to Computational Statistics and Database Technology;
2. To provide students with abilities conduct statistical analysis and marketing research to solve problem in related fields to be successful market researcher;
3. To prepare students with necessary skills in developing database and be expert in data mining to be excellence business analyst.

### Student Outcomes

After completing the study, graduates are:

1. Able to create software application design with the implementation of database system principal design to solve structured and semi-structured data;
2. Able to design software application solution based on problem analysis which can be solved with structured approach in informatics area;
3. Able to assess technology trend in informatics area to deliver alternative solution of software development;
4. Able to perform the experimental design, collection and generate data (in survey, experiments or simulations), organizing data, analyzing data using statistical techniques, and valid conclusion by using at least one statistical software;

5. Able to resolve the problem assessment (estimation), testing hypothesis, prediction, and forecasting on several fronts, using data and statistical methodologies (methods and models) and presenting it in a form that easily understood by the description of the user;
6. Able to analyze some alternatives solution in statistical field to solve the problems and able to present the conclusions analysis in order to make the right decision;
7. Able to implement statistical models into software solutions needed.

### **Prospective Career of the Graduates**

The graduates of the double study program Statistics and Computer Science are able to follow careers in:

1. Business (market researcher, forecasting analyst).
2. Management (business analyst, evaluator of company performance).
3. Information Technology area (database designer, system analyst).
4. Industry (data scientist, decision making analyst, quality control analyst).
5. Finance and Accounting (risk analyst, profitgrowth analyst).

### **Curriculum**

With reference to the Vision and Mission UBINUS, the role of Statistics and Computer Science in the future, and its current standing in Indonesia, the study program will contain the following elements:

1. Solid education to increase statistical analysis capability and ability to extract information from any kind of data that emerge in databases.
2. The academic atmosphere that will facilitate students' learning in order that the students will develop skills in communicating their statistical analysis and skills in developing database.
3. An environment that fosters active learner independence and encourages students to be able to succeed in their professional career and in the fields related to Computer Science and Applied Statistics.

Furthermore, besides this department provides the means and expertise in Statistics and Computer Science to prepare students for a career as a Market Researcher or Database Designer who be able to analyze any kind of data that emerge in databases to extract information, it also provides capability in developing Computer Science or Applied Statistics both in Indonesia and among the nations of the world in order to pursue higher degree of education.

**Course Structure**

Sem	Code	Course Name	SCU	Total	
1	CHAR6013	Character Building: Pancasila	2	20	
	COMP6060	Programming Language Concepts	2		
	COMP6047	Algorithm and Programming	4/2		
	MATH6038	Calculus I*	4		
	MATH6025	Discrete Mathematics*	4		
	<b>English University Courses I</b>				
	ENGL6128	English in Focus	2		
ENGL6130	English for Business Presentation	2			
2	CHAR6014	Character Building: Kewarganegaraan	2	21	
	MATH6015	Applied Linear Algebra*	4		
	MATH6039	Calculus II	4		
	COMP6048	Data Structures	4/2		
	STAT6026	Probability and Statistics*	2		
	LANG6061	Indonesian	1		
	<b>English University Courses II</b>				
	ENGL6129	English Savvy	2		
ENGL6131	English for Written Business Communication	2			
3	CHAR6015	Character Building: Agama	2	24	
	STAT6018	Statistical Theory I*	4		
	STAT6094	Statistical Computing Lab*	2/2		
	STAT6016	Simulation Techniques	2		
	COMP6056	Program Design Methods	4		
	COMP6175	Object Oriented Programming	2/2		
	COMP6153	Operating System	2/2		
4	ISYS6169	Database Systems	4/2	24	
	STAT6058	Sampling Techniques*	2		
	STAT6047	Numerical Methods for Statistics*	2		
	STAT6020	Statistical Theory II	4		
	STAT6011	Design and Analysis of Experiments	4		
	STAT6037	Non Parametric Statistics*	2		
	STAT6085	Regression Analysis*	2/2		
5	STAT6044	Categorical Data Analysis	2	24	
	COMP6049	Algorithm Design and Analysis	4		
	STAT6043	Linear Model*	2		
	ENTR6003	Entrepreneurship I	2		
	ISYS6172	Database Design	2/1		
	COMP6057	Software Engineering	4		
	STAT6051	Time Series Analysis*	2/1		
	STAT6053	Multivariate Statistics*	4		
6	STAT6054	Econometrics*	2/1	24	
	STAT6036	Stochastic Process*	4		
	COMP6065	Artificial Intelligence	4		
	CPEN6098	Computer Networks	2/2		
	COMP6176	Human and Computer Interaction	2/2		
	STAT6115	Statistical Quality Control**	2/1		
	STAT6055	Structural Equation Modeling*	2		

Sem	Code	Course Name	SCU	Total
7	ENTR6004	Entrepreneurship II	2	24
	COMP6062	Compilation Techniques	4	
	STAT6105	Statistical Marketing Research**	4	
	STAT6040	Scientific Computation*	4	
	STAT6031	Seminar	2	
	MATH6049	Mathematics of Finance*	4	
	STAT6106	Statistical Process Control*	4	
8	COMP6140	Data Mining	2/2	20
	ISYS6170	Data Warehouse	2/1	
	STAT6050	Survival Analysis*	2/1	
	MOBI6021	Mobile Programming	2/2	
	COMP6064	Geographical Information System	2/1	
	COMP6051	Web Programming	2/1	
9	<b>Enrichment Program</b>		15	15
10	STAT6030	Thesis	6	6
<b>TOTAL CREDIT 202 SCU</b>				

\*) This course is delivered in English

\*\*) Entrepreneurship Embedded

**English University Courses:**

- ) For 1<sup>st</sup> Semester: English University Courses I, student with score BINUS UNIVERSITY English Proficiency Test less than 500 will take English in Focus, and student with score test greater than or equal to 500 will take English for Business Presentation
- ) For 2<sup>nd</sup> Semester: English University Courses II, student with score BINUS UNIVERSITY English Proficiency Test less than 500 will take English Savvy, and student with score test greater than or equal to 500 will take English for Written Business Communication

**Enrichment Program (9<sup>th</sup> Semester):**

- ) Student will take one of enrichment program tracks (off campus).

**Enrichment Internship Track**

Code	Course Name	SCU	Total
STAT6090	Internship	8	15
STAT6091	Data Analysis in Industry	2	
STAT6092	Statistical Program in Industry	2	
STAT6117	EES in Statistics Industry	3	

**Enrichment Entrepreneurship Track**

Code	Course Name	SCU	Total
ENTR6292	Business Start Up	8	15
ENTR6206	Business Model & Validation in Statistics	2	
ENTR6207	Launching New Venture in Statistics	2	
ENTR6405	EES in Statistics	3	

**Enrichment Research Track**

Code	Course Name	SCU	Total
RSCH6225	Research Experience	8	15
RSCH6156	Scientific Writing in Statistics	4	
RSCH6210	Global EES in Statistics	3	

**Enrichment Community Development Track**

Code	Course Name	SCU	Total
CMDV6125	Community Outreach Project Implementation	8	15
CMDV6074	Community Outreach in Statistics Project Design	4	
CMDV6108	Employability and Entrepreneurial Skills in Statistics	3	

**Enrichment Study Abroad Track**

Code	Course Name	SCU	Total
<b>Elective courses list for study abroad*</b>			15
GLOB6005	Elective Course for Study Abroad 1	4	
GLOB6006	Elective Course for Study Abroad 2	4	
GLOB6007	Elective Course for Study Abroad 3	4	
GLOB6008	Elective Course for Study Abroad 4	4	
GLOB6009	Elective Course for Study Abroad 5	2	
GLOB6010	Elective Course for Study Abroad 6	2	
GLOB6011	Elective Course for Study Abroad 7	2	
GLOB6012	Elective Course for Study Abroad 8	2	
GLOB6013	Elective Course for Study Abroad 9	2	
GLOB6014	Elective Course for Study Abroad 10	2	
GLOB6015	Elective Course for Study Abroad 11	2	
GLOB6016	Elective Course for Study Abroad 12	2	
GLOB6041	Elective Course for Study Abroad 25	3	
GLOB6042	Elective Course for Study Abroad 26	1	

\*)Transferred courses will be transferred based on credit transfer policies on study program with total of 15 credits.

**Student should pass all of these quality controlled courses as listed below:**

No	Code	Course Name	Minimum Grade
1.	CHAR6013	Character Building: Pancasila	B
2.	ENTR6004	Entrepreneurship II	C
3.	COMP6047	Algorithm and Programming*	C
4.	COMP6048	Data Structures*	C
5.	STAT6026	Probability and Statistics	C
6.	MATH6039	Calculus II*	C
7.	COMP6056	Program Design Methods*	C
8.	STAT6020	Statistical Theory II*	C
9.	ISYS6169	Database Systems	C
10.	STAT6085	Regression Analysis	C
11.	COMP6057	Software Engineering*	C
12.	STAT6036	Stochastic Process	C
13.	STAT6053	Multivariate Statistics*	C
14.	STAT6115	Statistical Quality Control	C

\*) Tutorial & Multipaper