

# 東吳大學 103 學年度碩士班研究生招生考試試題

第 1 頁，共 3 頁

系級	國際經營與貿易學系碩士班國際企業組	考試時間	100 分鐘
科目	統計學	本科總分	100 分

1. What is the level of measurement for each of following variables? Why? (10%)
  - a. Student IQ ratings
  - b. distance students travel to class
  - c. the jersey numbers of a sorority soccer team
  - d. a classification of students by state or birth
  - e. a summary of students by academic class-that is, freshman, sophomore, junior, and senior
2. The following frequency distribution reports the number of frequent flier miles, reported in thousands, for employees of Soochow Statistical Consulting Inc. during the most recent quarter. (15%)

Frequent flier Miles	Numbers of employees
0 up to 3	5
3 up to 6	12
6 up to 9	23
9 up to 12	8
12 up to 15	2
total	50

- a. How many employees were studied?
- b. What is the midpoint of the first class?
- c. Construct a histogram.
- d. Construct a frequency polygon.
- e. A frequency polygon is to be drawn. What are the coordinates of the plot for the first class?
3. What are the assumptions for multiple regression analysis? (10%)
4. There are 5 flights daily from Taipei via China Airline into HK airport. Suppose the probability that any flight arrives late is .20. What is the probability that exactly two of the flights are late today? (5%)
5. Assume a binomial probability distribution X with  $n=40$  and probability=.45. Compute the following: (10%)
  - a. The mean and variance of the random variable.
  - b. The probability that X is 25 or greater.
  - c. The probability that X is less than 15.
  - d. The probability that X is between 15 and 25, inclusive.
6. What is type I error? What is type II error? (10%)
7. What is sampling distribution? What is probability distribution? (10%)

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第 2 頁，共 3 頁

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8. According to Soochow Trust corporation, Neihu was the most expensive rental office market in the Taipei city of December 2013. Suppose a random sample of 64 offices in Neihu had an average rental cost of \$1,848,500 per square foot. Assume the standard deviation of the population of office rent is \$470,000 per square foot. (10%)
- Determine the 98 % confidence interval for this sample.
  - Determine the 95% confidence interval for this sample.

9. A study by the American Realtor Association investigated the relationship between the commissions earned by sales associates last year and the number of years since the associates earned their estate licenses. Also of interest in the study is the gender of the sales associates. Below is a portion of regression output. The dependent variables is commissions, which is reported in dollar, and the independent variables are years since the licenses was earned and gender (female=1 and male=0). (20%)

Regression statistics	
Multiple R	0.71
R Square	0.51
Adjusted R Square	0.50
Standard Error	5542.74
Observations	474.00

ANOVA					
	df	SS	MS	F	significance
Regression	3	14861587763	4953862588	161.25	0.00
Residual	470	14439317202	30721951		
Total	473	29300904965			

	coefficients	standard error	t
intercept	-7280.20	1709.79	-4.26
years	1911.38	116.05	16.47
gender	12947.16	2670.42	4.85
years*gender	-1311.15	200.09	-6.55

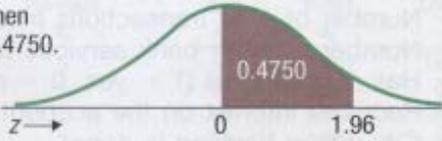
- Write out the regression equation.
- How much commission would you expect a female agent to make who earned her license 10 years ago?
- Interpret the meaning of -1311.15
- Interpret the meaning of 1911.38
- Interpret the meaning of 12947.16

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## B.1 Areas under the Normal Curve

Example:  
If  $z = 1.96$ , then  
 $P(0 \text{ to } z) = 0.4750$ .



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990