

TQF. 3



Bachelor's Degree

Master's Degree

Course Specification

Course Code: IBD2306

Course Title: Introduction to Big Data in Business

Credits: 3(3-0-6)

Programs: Digital International Business

Semester: 2

Academic Year: 2021

College of Hospitality Industry Management
Suan Sunandha Rajabhat University
(CHM, SSRU)

Section 1 - General Information

1. Course code and course title

Course code: IBD2306

Course title (English): Introduction to Big Data in Business

ชื่อวิชา (ภาษาไทย): บิ๊กดาต้าในธุรกิจเบื้องต้น

2. Credits

3(3-0-6)

3. Curriculum and course category

Curriculums: B.B.A. (Digital International Business)

Course Category:

- General Education Required Course
 Elective Course Others:

4. Lecturer

Lecturer responsible for this course: Dr.Pongrapee Kaewsaiha

Instructional course lecturer: Dr.Pongrapee Kaewsaiha

5. Contact

Room Number: 401 Tel.: 081-446-4238 Email: pongrapee.ka@ssru.ac.th

6. Semester/Academic year

Semester: 2 Academic Year: 2021

Number of enrolled students: TBA

7. Pre-requisite course

None

8. Co-requisite course

None

9. Learning center

CHM Building, Nakhon-Pathom Campus, Computer Lab

10. Last date for preparing and revising this course

January 2022

Section 2 - Aims and Objectives

1. Course aims

At the end of this course students will reach the desired learning outcomes based on five domains, as mentioned in the curriculum specification (TQF2), as follows:

1.1 Morals and ethics

1.1.1 Learning outcomes to be developed

- 1) The ability to project responsibility and morality in class and assigned tasks,
- 2) The ability to comply with rules, regulations, moral and societal standards,
- 3) The awareness of ethics in digital international business decisions and actions.

1.1.2 Teaching strategies

- 1) Utilize assignments and projects to assess students' responsibility and morality,
- 2) Provide examples of digital international business integrity in classroom,
- 3) Provide case studies that emphasize business ethics, digital ethics and privacy.

1.1.3 Assessment & evaluation strategies

- 1) Use attendance and participation as means of evaluation,
- 2) Use assignments to assess students' responsibility,
- 3) Evaluate students regarding moral misconduct.

1.2 Knowledge

1.2.1 Learning outcomes to be developed

- 1) Have knowledge in business theories and concepts,
- 2) Analyze and solve real business practical problems and issues in digital era,
- 3) Apply business knowledge integrated with other disciplines.

1.2.2 Teaching strategies

- 1) Use problem-based learning,
- 2) Use cooperative learning techniques,
- 3) Invite guest speakers or organize a field trip.

1.2.3 Assessment & evaluation strategies

- 1) Pop-quiz, midterm, and final examination,
- 2) Term Project,
- 3) Class assignments.

1.3 Cognitive skills

1.3.1 Learning outcomes to be developed

- 1) The ability to gather, research, and summarize information and knowledge,
- 2) Self-studying and sharing information with others,
- 3) The ability to find appropriated solutions for real business issues.

1.3.2 Teaching strategies

- 1) Assign group or individual projects,
- 2) Assign group discussion or seminar,
- 3) Provide problem-based learning tasks.

1.3.3 Assessment & evaluation strategies

- 1) Evaluate presentation and/or report projects,
- 2) Evaluate in class activities using personal involvement rubrics.

1.4 Interpersonal skills and responsibility

1.4.1 Learning outcomes to be developed

- 1) The ability to learn for themselves and help group member to learn,
- 2) The ability to use appropriated method for interpersonal communication and discussion,
- 3) The ability to create business ideas and to have leadership skill.

1.4.2 Teaching strategies

- 1) Implement student center learning method and problem-based learning,
- 2) Engage students in collaborative activities,
- 3) Use cooperative learning techniques.

1.4.3 Assessment & evaluation strategies

- 1) Assess students' participation in teamwork,
- 2) Observe students' interpersonal communication and discussion,
- 3) Evaluate students' business creativities and innovativeness from presentation or assignments.

1.5 Numerical analysis, communication, and information technology skills

1.5.1 Learning outcomes to be developed

- 1) The ability to use basic ICT skills and apply them to daily life,
- 2) The ability to use statistics data to solve business problems,
- 3) The ability to use data analytics to analyze business issues.

1.5.2 Teaching strategies

- 1) Assign activities that allow students to implement their ICT skills,
- 2) Encourage students to use data analytics or statistics in assignments or projects conduction.

1.5.3 Assessment & evaluation strategies

- 1) Evaluate ability to use ICT skills from students' assignments,
- 2) Evaluate ability to use statistic data implemented in assignments or projects,
- 3) Evaluate ability to use data analytics software and/or application in their work and studies.

2. Objectives for developing/revising course (Content/Learning Process/Assessment/ etc.)

According to TQF (Thailand Quality Framework: H.Ed.) for General Education courses, undergraduate students should have opportunity to master learning in nature of person, think logically, good communication, realize morals and ethics, realize Thai cultural value and global cultural value. Finally, students can apply knowledge in daily life for quality of life.

Section 3 - Characteristics and Operations

1. Course description

(English)

Basic concept and process in big data, data science and AI to make better business decisions and gain competitive advantage, cost reduction advantages, decision making techniques.

(Thai)

แนวคิดพื้นฐานและกระบวนการในข้อมูลขนาดใหญ่ วิทยาศาสตร์ข้อมูล และปัญญาประดิษฐ์เพื่อการตัดสินใจทางธุรกิจที่ดีขึ้นและได้เปรียบในการแข่งขัน ข้อได้เปรียบในการลดต้นทุน เทคนิคการตัดสินใจ

2. Time length per semester (Lecture/Practice/Self-study hours)

Lecture	Practice/ Field Work/Internship	Self-Study	Remedial Class
	3 hours/week	6 hours	-

3. Individual consulting and guidance

Self-consulting at the lecturer's office:

Room Number 401, CHM Building, Nakhon-Pathom Campus

Mon., 9 AM – 4 PM

Consulting via office telephone/mobile phone:

081-446-4238

Consulting via email:

pongrapee.ka@ssru.ac.th

Consulting via social media platform (Facebook/Twitter/Line):

Line OpenChat

Consulting via LMS:

Moodle LMS

Section 4 - Developing Students' Learning Outcomes

Expected students' learning outcomes are categorized into five domains, developed from curriculum specification (TQF2), as follows:

1. Morals and ethics

1.1 Learning outcomes to be developed

- 1) The ability to project responsibility and morality in class and assigned tasks,
- 2) The ability to comply with rules, regulations, moral and societal standards,
- 3) The awareness of ethics in digital international business decisions and actions.

1.2 Teaching strategies

- 1) Utilize assignments and projects to assess students' responsibility and morality,
- 2) Provide examples of digital international business integrity in classroom,
- 3) Provide case studies that emphasize business ethics, digital ethics and privacy.

1.3 Assessment & evaluation strategies

- 1) Use attendance and participation as means of evaluation,
- 2) Use assignments to assess students' responsibility,
- 3) Evaluate students regarding moral misconduct.

2. Knowledge

2.1 Learning outcomes to be developed

- 1) Have knowledge in business theories and concepts,
- 2) Analyze and solve real business practical problems and issues in digital era,
- 3) Apply business knowledge integrated with other disciplines.

2.2 Teaching strategies

- 1) Use problem-based learning,
- 2) Use cooperative learning techniques,
- 3) Invite guest speakers or organize a field trip.

2.3 Assessment & evaluation strategies

- 1) Pop-quiz, midterm, and final examination,
- 2) Term Project,
- 3) Class assignments.

3. Cognitive skills

3.1 Learning outcomes to be developed

- 1) The ability to gather, research, and summarize information and knowledge,
- 2) Self-studying and sharing information with others,
- 3) The ability to find appropriated solutions for real business issues.

3.2 Teaching strategies

- 1) Assign group or individual projects,
- 2) Assign group discussion or seminar,
- 3) Provide problem-based learning tasks.

3.3 Assessment & evaluation strategies

- 1) Evaluate presentation and/or report projects,
- 2) Evaluate in class activities using personal involvement rubrics.

4. Interpersonal skills and responsibilities

4.1 Learning outcomes to be developed

- 1) The ability to learn for themselves and help group member to learn,
- 2) The ability to use appropriated method for interpersonal communication and discussion,
- 3) The ability to create business ideas and to have leadership skill.

4.2 Teaching strategies

- 1) Implement student center learning method and problem-based learning,
- 2) Engage students in collaborative activities,
- 3) Use cooperative learning techniques.

4.3 Assessment & evaluation strategies

- 1) Assess students' participation in teamwork,
- 2) Observe students' interpersonal communication and discussion,
- 3) Evaluate students' business creativities and innovativeness from presentation or assignments.

5. Numerical analysis, communication, and information technology skills

5.1 Learning outcomes to be developed

- 1) The ability to use basic ICT skills and apply them to daily life,
- 2) The ability to use statistics data to solve business problems,
- 3) The ability to use data analytics to analyze business issues.

5.2 Teaching strategies

- 1) Assign activities that allow students to implement their ICT skills,
- 2) Encourage students to use data analytics or statistics in assignments or projects conduction.

5.3 Assessment & evaluation strategies

- 1) Evaluate ability to use ICT skills from students' assignments,
- 2) Evaluate ability to use statistic data implemented in assignments or projects,
- 3) Evaluate ability to use data analytics software and/or application in their work and studies.

Remark: The symbol ● means “major responsibility.”

The symbol ○ means “minor responsibility.”

No symbol means “no responsibility.”

Section 5 - Lesson Plan and Assessment

1. Lesson plan

Week	Topic/Outline	Hours	Learning Activities	Lecturer
1	Course introduction Chapter 1 Fundamental concepts of data science, big data, and AI	3	<ol style="list-style-type: none"> 1. Introduce students to the course. Make an agreement on assessment and evaluation. Introduce the LMS and solve any technical problem if necessary. 2. Learn key steps of data science, how big data influences businesses in the digital era and how AI deals with that. 3. Students learn from a pre-recorded video series and complete an online quiz. 	Dr. Pongrapee
2	Chapter 2 Classification problem (k-means clustering)	3	<ol style="list-style-type: none"> 1. Learn how to sort customers into groups based on their common characteristics. 2. Students learn from a pre-recorded video series and complete an online quiz. 	Dr. Pongrapee
3	Chapter 3 Principal Component Analysis (PCA)	3	<ol style="list-style-type: none"> 1. Learn how to reduce the dimensions of variables, allowing 2D or 3D visualization. 2. Students learn from a pre-recorded video series and complete an online quiz. 	Dr. Pongrapee
4	Chapter 4 Association rules	3	<ol style="list-style-type: none"> 1. Learn how to determine purchasing patterns, including support, confident, and lift. 2. Students learn from a pre-recorded video series and complete an online quiz. 	Dr. Pongrapee
5	Chapter 5 Social Network Analysis (SNA)	3	<ol style="list-style-type: none"> 1. Determine how social groups are related with one another, how group members drive the group dynamic, and learn how to use it for gaining business advantages. 2. Students learn from a pre-recorded video series and complete an online quiz. 	Dr. Pongrapee
6	Chapter 6 Regression analysis	3	<ol style="list-style-type: none"> 1. Learn how to predict future trends by applying a regression technique with historical data. 2. Students learn from a pre-recorded video series and complete an online quiz. 3. Perform a simple regression using a spreadsheet program or a web app. 	Dr. Pongrapee
7	Mid-term examination	3		

Week	Topic/Outline	Hours	Learning Activities	Lecturer
8	Chapter 7 k-nearest neighbors	3	1. Learn how to classify a data point based on classification of its neighbors. 2. Students learn from a pre-recorded video series and complete an online quiz.	Dr. Pongrapee
9	Chapter 8 Support Vector Machine (SVM)	3	1. Learn how to classify data points by drawing a boundary line that separate them into two distinct groups. 2. Students learn from a pre-recorded video series and complete an online quiz.	Dr. Pongrapee
10	Chapter 9 Decision tree	3	1. Learn how to predict chances of event occurrence by a sequence of binary questions. 2. Students learn from a pre-recorded video series and complete an online quiz.	Dr. Pongrapee
11	Chapter 10 Random forest	3	1. Learn how to apply bootstrap aggregating and ensembling techniques. 2. Students learn from a pre-recorded video series and complete an online quiz.	Dr. Pongrapee
12	Chapter 11 Neural networks	3	1. Learn how AI imitates the human neuron system to respond to problems and learning. 2. Students learn from a pre-recorded video series and complete an online quiz.	Dr. Pongrapee
13	Chapter 12 A/B testing	3	1. Learn how to conduct an A/B testing. 2. Students learn from a pre-recorded video series and complete an online quiz.	Dr. Pongrapee
14-15	Additional practice	6	More hands-on activities	Dr. Pongrapee
16	Make-up class	3		
17	Final Examination	3		

Note: Lesson plan might be affected by the COVID-19 pandemic.

2. Learning assessment plan

Learning Outcomes	Assessment Activities	Schedule (Week)	Proportion for Assessment (%)
1.1, 1.2, 1.3	1) Attendance record 2) Classroom observation (on-site) 3) System log (online/on-demand)	All	10
2.1, 2.2, 2.3	1) Quiz 2) Examination	All 7, 17	30 20, 30
3.1, 3.2, 3.3 4.1, 4.2, 4.3 5.1, 5.2, 5.3	Individual Assessment	6, 14, 15	10

Section 6 - Learning and Teaching Resources

1. Textbook and main documents

- Ng, A., & Soo, K. (2017). *Numsense! Data Science for the Layman: No Math Added*. Annalyn Ng and Kenneth Soo.
- Course materials provided by the lecturer

2. Important documents for extra study

- Online lesson provided by the teacher
- Video presentations from YouTube

3. Suggested information (Printing Materials/Website/CD/Others)

Information retrieved from search engines (e.g., Google) and online videos

Section 7 - Course Evaluation and Revising

1. Strategies for course evaluation by students

- 1) Conduct a survey to collect information from students. The topics include:
 - Course aims and objectives
 - Course materials
 - Learning methods and assessment
 - Advisory method
- 2) Observe students' behavior in the classroom.
- 3) Interview students.

2. Strategies for course evaluation by the lecturer

The lecturer observes the class and collects immediate feedback from students.

3. Teaching revision

The lecturer revises teaching and learning process based on the results from the questionnaire results.

4. Feedback for achievement standards

CHM administrator committees monitor the assessment process and grading.

5. Methodology and planning for course review and improvement

- 1) Revise and develop course structure and process every three years.
- 2) Assign different lecturers to teach this course to enhance students' vision.

Curriculum Mapping Illustrating the Distribution of Program Standard Learning Outcomes to Course Level

Courses	1. Morals and Ethics			2. Knowledge			3. Cognitive Skills			4. Interpersonal Skills and Responsibility			5. Numerical Analysis, Communication and Information Technology Skills		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
IBD2306 Introduction to Big Data in Business	●	○	○	●	○	○	○	○	●	○	●	○	○	○	●

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Expected learning outcomes are combined for multiple-group instruction.