Course Outline

OM201 Operations Management

Semester 2/2025 (January 5 – May 2, 2026)

Lecture Time: Friday, 13.00-16.00 hours

Lecture Venue: Room 203

Teaching Materials Platform: [Google Classroom / MS Teams / Facebook Group / etc. Please specify with an actual URL or access code.]

Instructor:

Name: Asst. Prof. Dr. Panuwong Kumpirarusk

Office Hours: Friday, 10.00 – 11.30 hours

Email: om201be@gmail.com

Phone: 089-834-2110

Number of Credit: 3 Credits (3-0-6)

Prerequisite: -

Course Description:

Study of concepts, techniques and tools to design, analyze, and improve core operational capabilities, and their application to a broad range of industries. Topics include operations strategy, productivity, product/ service design, process design, quality management, inventory management, project management, supply chain management, operational performance measurement and operations for sustainability.

Course Objectives:

The objective of this course is to provide students with basic concepts and techniques in managing the operations of a production unit and/ or a service organization, which leads to achieve excellent and sustainable operation and supply chain.

Expected Learning Outcomes

Expected Learning Outcomes	Measurements
K1: Students possess core knowledge and understanding in the science of Business Administration.	- Major science concepts related to business administration shall be tested in midterm and final examinations.
K3: Students possess core knowledge and understanding in Business Administration Process, in the aspect of Planning, Organization Design and Execution.	- Major operations management concepts shall be tested in midterm and final examinations.
S2: Students can think critically, logically and creatively. Students should be able to integrate from their profession, study and experience into solving general and business problems.	- Design of product/service/process based on logical and creative ideas shall be apparent in the group assignments. - Analysis of situations and critical decisions shall be done in the simulation game.
S3: Students can come up with an alternative solution. Assess and evaluate each solution comprehensively and able to choose the solution suiting to each circumstance, leading to advantage in business competition.	- Analysis of situations and critical decisions shall be done in the simulation game.
E1: Students possess quality of honesty, sacrifice and self-restraint. Take responsibility for their own action, society and environment.	- Accomplish group assignments and group presentations with reasonable effort.
E2: Students are disciplined, follow rules and regulations of their organization and society.	- Attend classes with good manners and punctuality. - Submit assignments and reports on time.
E3: Students have a good understanding of Ethics, Ethics Important for Business, and Problem Solving Ethically.	- Plagiarism in assignments and reports shall be not apparent.
C2: Students are up to date on social and business issues.	- Academic advancement and professional development shall be tested in midterm and final examinations.

Learning Management and Evaluation

CLO	Learning Management	Evaluation
K1,K3	Lecture and discussion	Midterm examination
K1,K3	Lecture and discussion	Final examination
K1,K2	Lecture and exercises	Quiz 1 & 2
S2	Brainstorming	Deliverables of Groupwork 1
S3	Brainstorming	Written report of Groupwork 2
E1,E2,E3	Lecture and discussion	Class attendance and participation
C2	Presentations	Presentation of Groupwork 2

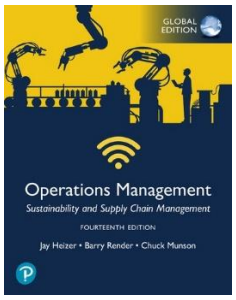
C2	Brainstorming	Written report of Groupwork 2 (Information technology-embedded solutions)

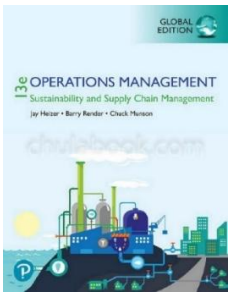
Learning Assessment Plan

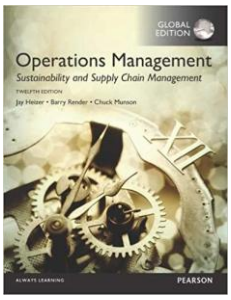
CLO	Methods of Learning Assessment	Assessment Week	Proportion of Assessment
K1,K3	Midterm examination	Midterm Exam Period	25%
K1,K3	Final examination	Final Exam Period	30%
K1,K3	Quiz 1 & 2	4, 13	5%, 5%
S2	Deliverables of Groupwork 1	7	10%
S3	Written report of Groupwork 2	15	10%
E1,E2,E3	Class attendance and participation check	1-15	5%
C2	Presentation of Groupwork 2	15	8%
C2	Written report of Groupwork 2 (Information technology-embedded solutions)	15	2%

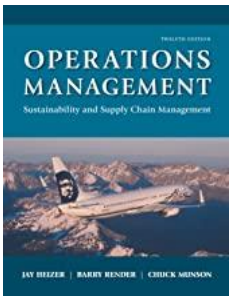
Main Text:

"Operations Management: Sustainability and Supply Chain Management" Global edition, 14th Edition, By Jay Heizer, Barry Render, Chuck Munson, Pearson, Published: 2023.









Recommended Texts & Materials

Teaching notes and coursework from lecturer will be uploaded to MS Teams.

Suggested Readings:

Business newspapers and magazines

Class Attendance and Participation Check:

Class Attendance	Weighted Score
12-15	5.0
10-11	4.5
8-9	4.0
7	3.5
6	3.0
5	2.5
4	2.0
3	1.5
2	1.0
1	0.5
0	0

Grading Rule:

Grades	Percentage
A	85-100
B+	75-84
B	70-74
C+	65-69
C	60-64
D+	50-59
D	40-49
F	0-39

Evaluation Methods:

Methods/Activities	Week	Weighted Score
Individual in-class quiz (2 x 5%)	4, 13	10%
Groupworks (10%, 20%)	7, 15	30%
Class attendance and participation		5%
Midterm exam		25%
Final exam		30%
Total		**100%**

Tentative Class Schedule:

Week	Date	Topic	Material and Activities
1	9-Jan-2026	**Course Introduction** • Course Syllabus • Learning Expectation • Class Networking **Operations and Productivity (1/2)** • What is Operations Management? • Characteristics of Goods and Services	Lecture & Quiz **Chapter 1**
2	16-Jan-2026	**Operations and Productivity (2/2)** • Single Factor and Multi-Factor Productivities • Ethics, Social Responsibility, and Sustainability in Operations Management • Exercises on Productivity Calculation	
3	23-Jan-2026	**Operations Strategies for Sustainability (1/2)** • Mission and Vision • Core Competencies, Competitive Advantage, and Outsourcing • Low Cost, Differentiation, and Response Strategies	Lecture & Groupwork **Chapter 2**
4	30-Jan-2026	**Operations Strategies for Sustainability (2/2)** • SWOT Analysis and TOWS Matrix • Global Operations Strategies • *Instruction of Groupwork 1 on Strategy Formulation* Individual in-class quiz #1 on Productivity Calculation (5%)	
5	6-Feb-2026	**Quality Management (1/2)** • Definition and Importance of Quality • Determinants of Product Quality & Service Quality • Cost of Quality	Lecture & Discussion **Chapter 6**
6	13-Feb-2026	**Quality Management (2/2)** • Total Quality Management Concepts • Basic 7 QC Tools **Wrap up for Midterm Examination**	

Week	Date	Topic	Material and Activities
7	20-Feb-2026	**Presentation of Groupwork 1 on Strategy Formulation**	Groupwork 1 (10%)
Midterm Examination (25%)			
8	6-Mar-2026	**Product and Service Design (1/2)** • Design Thinking Process • Product Development Process • *Instruction of Groupwork 2 on New Product & Service Design for Digital Nomad in Thailand*	Lecture & Groupwork **Chapter 5**
9	13-Mar-2026	**Product and Service Design (2/2)** • Service Blueprinting • Elements of Good Design • Product Life Cycle & Strategies	
10	20-Mar-2026	**Process Design** • Process Type Selection and Strategies • Process Analysis and Design • Seven Wastes • Process Tools and Improvement • Service Process Design	Lecture & Discussion **Chapter 7**
11	27-Mar-2026	**Supply Chain Management** • Definition and Importance of Supply Chain • Sourcing Strategies • Performance of Supply Chain Presentation of Groupwork 2's Progress on Stage 1 & 2	Lecture & Discussion **Chapter 11**
12	3-Apr-2026	**Inventory Management** • Definition and Importance of Inventory • ABC Model • Basic EOQ Model • Inventory Control & Management • Exercises on Inventory Model Calculation	Lecture & Quiz **Chapter 12**
13	10-Apr-2026	**Project Management (1/2)** • Importance of Project Management • Project Planning, Scheduling, and Controlling • Roles of Project Manager • Project Network Drawing Individual in-class quiz #2 on Inventory Model Calculation (5%)	Lecture & Exercise **Chapter 3**
14	24-Apr-2026	**Project Management (2/2)** • Critical Path Method: CPM • Exercises on Project Management Calculation **Wrap up for Final Examination**	
15	1-May-2026	**Presentation of Groupwork 2 on New Product & Service Design for Digital Nomad in Thailand**	Groupwork 2 (20%)
Final Examination (30%)			

Groupwork 1:

Strategy Formulation for Thammasat University Library

VISION

Library of Life

To enhance learning, research, innovations, and future skills for the people of Thammasat and society.

MISSION

1. Manage and provide information resource services.
2. Develop innovation and learning resources.
3. Sustainably develop the organization towards internationalization.

VALUES

T Thammasat Spirit
U Unity
L Leadership
I Innovative
B Benevolence

Source: https://library.tu.ac.th/bbs/content/94_459

Instructions

1. The lecturer assigns 7-8 students per group to carry out Groupwork 1.

2. Review the current vision, mission and values of the organization as shown above. Additional information can be found on the organization's website and other sources.

3. Conduct SWOT analysis.

4. Develop TOWS matrix and formulate **at least FOUR strategies** including

   - One SO strategy

   - One WO strategy

   - One ST strategy

   - One WT strategy

   (Follow step by step as shown on the appendix 1.1 & 1.2)

5. Prepare and submit your presentation slides in time.

6. Present your work within 12-15 minutes.

Requirements of the Presentation

1. No plagiarism appears on the presentation. Don't just copy and paste. Express your analysis and your own opinion as much as possible.

2. Conduct SWOT analysis. **There should be at least three strengths, three weaknesses, three opportunities, and lastly three threats.** Each item should be explained clearly.

3. Develop TOWS matrix and formulate strategies:
   - At least one strategy for each matrix
   - Each strategy must be in the area of "Ten Strategic Decisions" as shown below:

Ten Strategic Decisions

TABLE 1.2

DECISION	CHAPTER(S)
1. *Design of goods and services*	5 (OM201), Supplement 5
2. *Managing quality*	6 (OM201) , Supplement 6
3. *Process and capacity strategy*	7 (OM201) , Supplement 7
4. *Location strategy*	8
5. *Layout strategy*	9
6. *Human resources and job design*	10
7. *Supply-chain management*	11 (OM201) , Supplement
8. *Inventory management*	12, 16 (OM201) , 14
9. *Scheduling*	13, 15
10. *Maintenance*	17

   - Marketing and financial strategies are not welcome in this groupwork.

4. Prepare your presentation containing at least 15 slides. Design theme, mood, and tone for slides.

5. Submit your presentation file in PDF format to om201be@gmail.com by noontime, Wednesday of 18 February 2026.

6. Present your work in class on Friday of 20 February 2026. Each group has 12-15 minutes for presenting. At least 3 presenters are required.

Grading Criteria

Content Delivered (6 pts)	Presentation (4 pts)
- Complete SWOT analysis (0.75 x 4 = 3 pts) - Good recommendations on SO, WO, ST and WT strategies (0.75 x 4 = 3 pts)	- Well-organized slides (1.5 pts) - Presentation skills and teamwork (1.5 pts) - Presentation time keeping (0.5 pt) - Punctual submission of slides (0.5 pt)

Appendix 1.1

TOWS Matrix Definition | Analysis and Strategies

Source: http://www.businessstudynotes.com/marketing/marketing-management/tows-matrix-strategies/

April 24, 2016 by Umar Farooq

TOWS Matrix Definition

The TOWS matrix analysis (Threats-Opportunities-Weaknesses-Strengths) also known as **SWOT Analysis**. We may also call the TOWS matrix, TOWS Analysis. It is the abbreviation of threats, opportunities, strengths & weaknesses involved in a business venture, project or any other situation that needs a decision, are evaluated with the help of strategic planning tool of TOWS matrix analysis.

TOWS Matrix | TOWS Analysis Strategies

For the purpose of formulation of strategy, TOWS analysis is an important tool. Four kinds of strategies are developed by the managers with the help of matching tool of (Threats-Opportunities-Weaknesses-Strengths). **TOWS matrix** of marketing. On the basis of this analysis, you may easily develop successful strategies for your business after seeing and analyzing your competitors deeply.

1. SO Strategies (Strengths-Opportunities)
2. WO Strategies (Weakness-Opportunities)
3. ST Strategies (Strengths-Threats)
4. WT Strategies (Weakness-Threats)

The matching of internal & external factors is the most difficult part of TOWS Matrix. When the objectives are identified, then the TOWS are ascertained & listed. Following is the precisely definition of the TOWS.

Strengths: Those internal attributes of the business that are supportive in the accomplishment of the objectives are regarded as strengths.

Weaknesses: Those internal attributes of the business which are harmful for the accomplishment of the objectives of the organization are regarded as weaknesses.

Opportunities: Those external conditions which are supportive to the accomplishment of the objectives of the organization are regarded as opportunities.

Threats: Those external conditions which are harmful to the accomplishment of the objectives of the organization are considered to be as threats.

The Strengths & Weaknesses are internal factors of the organization like high production capacity, lack of variety of products etc.

On the other hand, Opportunities & Threats are external factors for the organization like increase in demand of certain product due to change in the lifestyle of customers, regulatory changes, economic crisis etc.

The Threats-Opportunities-Weaknesses-Strengths (TOWS Matrix) analysis can be much subjective in nature. It is very difficult that two person finds the same kind of results in the TOWS analysis even when they are provided with similar type of information about the business organization along with its environment. The TOWS matrix is regarded as a guide instead of any prescription. The validity of the analysis is enhanced when each factor is added & weighted under some criteria.

1. **SO Strategies**:

It is the desire of every organization that it get benefit from its resources but the only way to accomplish that desire is to use the potential strength in the availing of the external opportunity. The opportunity for external resources is obtained from the internal strength of the business organization which is in the shape of assets. For example, when an organization has sound financial position then it becomes strength of the business organization which is used to availed the external opportunity of expanding the business. This matching strategy of the strength of strong financial position with the external opportunity of expanding the business is referred to as SO strategy.

2. **WO Strategies**:

The matching combination of weaknesses of the business organization with the external opportunities is included in the WO strategies. When the organization try to overcome the internal weakness with the help of the external opportunity. WO strategy becomes useful. For example, when an organization is facing severe financial crisis then it becomes a weakness which is matched with the external opportunity of merger with the multinational company.

3. **ST Strategies**:

The external threats can be overcome with the help of effective ST Strategies. It is not necessary that the organization should always faces the external environment threats front to front basis. Different colleges adopt ST strategy by opening new branches so that the competitive threat can be overcome. **Porter Model** also explains such kinds of threats.

4. **WT Strategies**:

It is desire of every organization that it can overcome its weakness and reduce the threats. WT strategy is applied to remove the weaknesses which will overcome the external threats. It is hard to pursue WT strategy. For example, when an organization holds weak distribution channels then it results in creation of many problems for the organization. All these external problems can be removed by making the distribution network of the organization strong enough.

Steps for Developing TOWS Strategies

A Threats-Opportunities-Weaknesses-Strengths (TOWS Matrix) is constructed in the following eight steps.

1. Ranking of external opportunities (at least 3)
2. Ranking of external threats (at least 3)
3. Ranking of internal strengths (at least 3)
4. Ranking of internal weaknesses (at least 3)
5. Matching of internal strengths with the external opportunities & specification of the results in the cell of SO strategies (at least 1)
6. Matching of the internal weaknesses with the external opportunities & specification of the results in the cell of WO strategies (at least 1)
7. Matching of internal strengths with the external threats & specification of the results in the cell of ST strategies (at least 1)
8. Matching of the internal weaknesses with the external threats & specification of the results in the cell of WT strategies (at least 1)

Appendix 1.2

TOWS Matrix

	Ranked Opportunities O1 … O2 … O3 …	Ranked Threats T1 … T2 … T3 …
Ranked Strengths S1 … S2 … S3 …	SO strategies S1O1 … S3O2 …	ST strategies S1T1 … S1T3 … S2T1 …
Ranked Weaknesses W1 … W2 … W3 …	WO strategies W2O3 …	WT strategies W1T2 … W2T1T3 …

The strategies can be based on:

(1) One-on-one such as S1O1
(2) One-on-many such as S2T1T3
(3) Many-on-one Such as W1W2O4
(4) Many-on-many such as W3W4O1T4

Groupwork 2

"Design a new product or service for the Digital Nomad in Bangkok"

Instructions

1. Team up voluntarily 7-8 students per group.
2. Use "5 stages of design thinking process" as shown on Appendix 2.1 to develop a new product or service for the digital nomad in Bangkok. The digital nomad means a person who earns a living working online in various locations of his choosing (rather than a fixed business location).
2. Use at least one of the brainstorming techniques in the stage of Ideate.
3. In case of new product, sketch product mockups in the stage of Prototyping.
   In case of new service, sketch service blueprints or service storyboards in the stage of Prototyping. Information technology shall be embedded in the new product or service.
4. Submit the report and the presentation files.
5. Present your work.

Requirements

1. No plagiarism on the group work. Don't just copy and paste.
2. At stage 1: Empathize, information collection.
3. At stage 2: Define, customer personas, pain points and a clear problem statement.
4. At stage 3: Ideate, choose a technique for brainstorming, conduct brainstorming in order to get at least 4 idea solutions, and then conclude for 2 potential solutions.
5. At stage 4: Prototype, sketch at least 2 product mockups or 2 service blueprints/ storyboards for the 2 potential solutions that shall embed information technology.
6. At stage 5: Test, let at least 5 target customers evaluate the appropriateness of the potential solutions by "Factor-rating methods" as shown on Appendix 2.2.
7. Prepare your report at least 20 pages of A4 paper from the cover page to the references. Type in Calibri (Body), font size 11, single line spacing, and normal page margin of 1 inch. The report content must continually type with no vacant space in each page. The pictures, figures, and tables can be included appropriately.
7. Prepare your presentation containing at least 15 slides.
8. Submit your report file in MS Word format and your presentation file in PDF format to om201be@gmail.com by noontime of Wednesday, 29 April 2026.
9. Present your work in class on Friday, 1 May 2026. Each group has 20 minutes for presenting. All students must present a certain part of your group work.

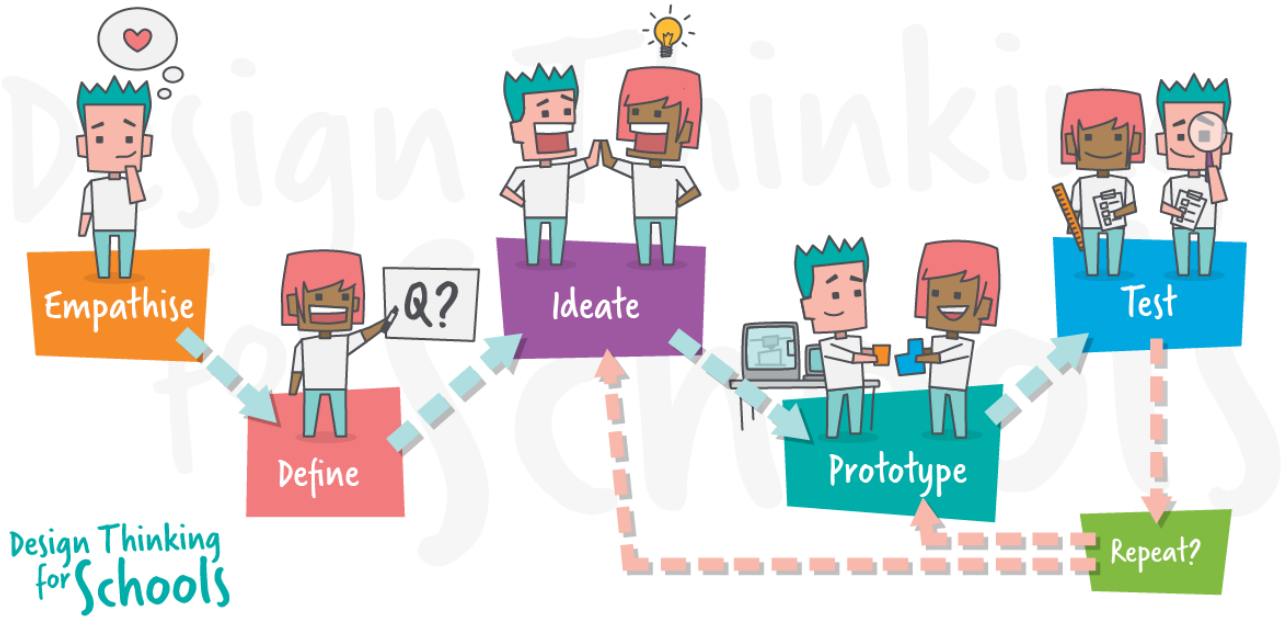
Grading Criteria

Report (12 pts)	Presentation (8 pts)
- Empathize your customer at stage 1 (2 pts) - Define problem statement at stage 2 (2 pts) - 4 idea solutions at stage 3 (2 pts) - 2 prototypes at stage 4 (2 pts) - Evaluate appropriateness at stage 5 (2 pts) - IT-embedded solutions (2 pts)	- Well-organized slides (3 pts) - Presentation skills and teamwork (3 pts) - Punctual submission & time keeping (2 pts)

Appendix 2.1

What Is Design Thinking and 5 Stages of the Design Thinking Process

Source: https://lvivity.com/design-thinking-process



We are constantly looking for new techniques suitable for solving usual issues and experimenting with approaches to find the very principles helping us increase the probability of success when working on our projects. It is not surprising, as the product quality is largely dependent on the approach we use when working on it.

From this perspective, it is worth paying attention to the growing popularity of design thinking as a technique meeting the modern innovative economy requirements to the fullest extent. We have decided to consider this issue in more detail in our article and provide answers to a number of important questions.

What Is Design Thinking and Its Key Principles?

Let us word the design thinking definition:

The product creation technique focused on the end user interests when the whole range of creative and analytical skills are used to solve problems

What we mean is that the approach “there is a client for every product” is changed to the opposite one. First, we have to comprehend what exactly a potential customer needs, and then, we figure out how to develop the product which will satisfy their demands.

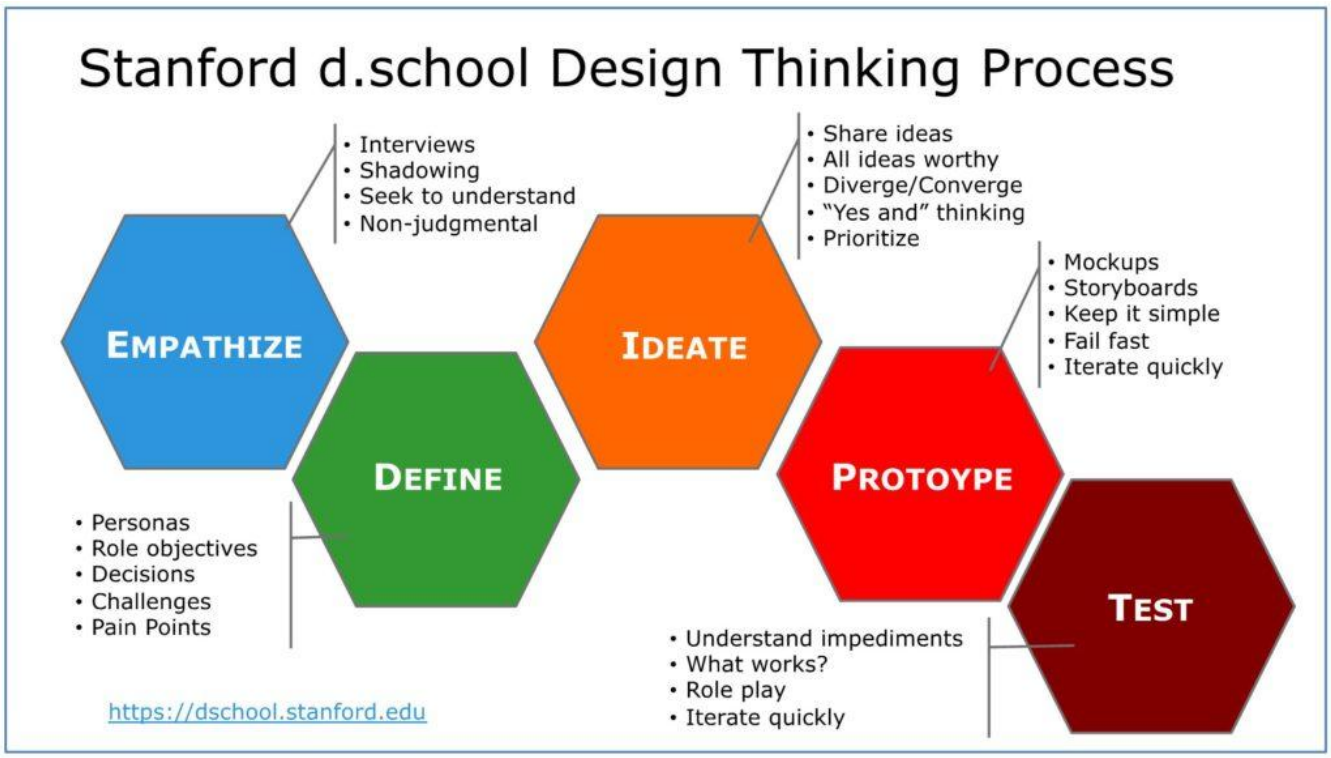
Design thinking is more than just a technique. We can confidently call it a kind of philosophy or mindset. Moreover, it is based on the following principles:

1. **Personality first.** A quality product solves problems which its audience may have and fits into the context. It is necessary to study the audience, identify its problems, and offer a solution.
2. **Bi-directionality.** Two types of thinking are used: divergent (quantitative) and convergent (qualitative). First of all, we work to identify a number of issues or invented ideas, and then, we choose the best one.

3. **Mistakes allowed.** Accept your mistakes and have no scruples about them. It is often a mistake that leads to a remarkable solution.
4. **Create prototypes.** A prototype is not a product yet. It is actually a model which clearly explains how it works. Its main task is to help people understand how the solution will work for them.
5. **Test them without delay.** Prototypes are developed to test them. The audience provides feedback, interacting with them, and the feedback is used to improve the product. Testing a prototype is cheaper than product development and saves it from failure after it was launched.
6. **Improvements never end.** At last, you have developed a cool and popular product, and everyone is happy with the result. Do you think you are done with it? Not at all! Firstly, you can do everything better. Secondly, your solution may eventually become outdated.

5 Stages in the Design Thinking Process

The design thinking process is a set of specific steps. Different schools, teaching design thinking methodology, may have a slightly different list of stages and their names. Let us look at the algorithm, presented by the Stanford d.school, which has already become classical.



1. Empathize

At this stage, developers monitor users. Goal: to understand what people are doing and why they are doing it.

We plunge into the problem area as much as possible at this step. The user is the central object of our research. We are concerned with their needs, behavior, and thoughts. We survey them, listen to them and observe them.

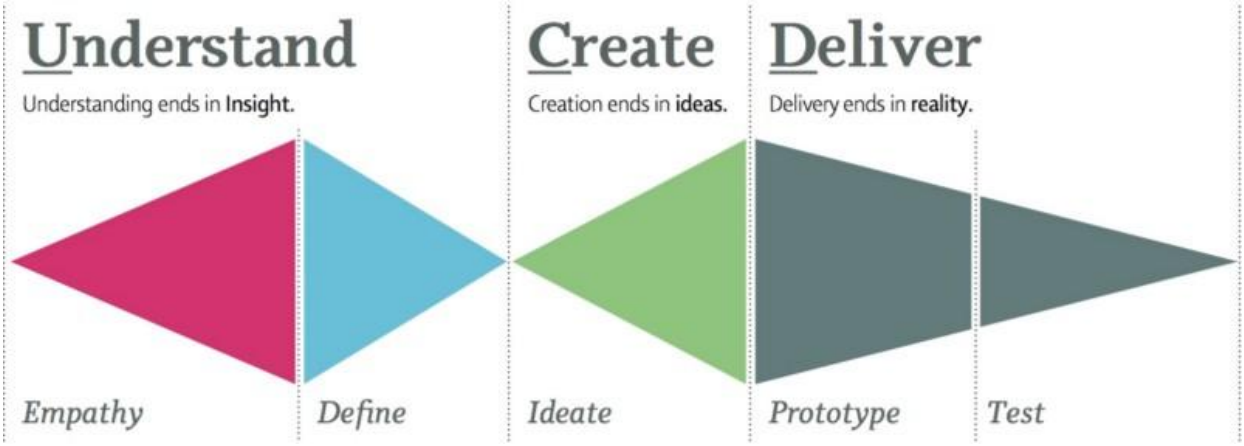
The essence of the first stage is to understand the problem correctly. It is the only way to find the right solution.

Note: Shadowing: the researcher accompanies the user and observes how they use the product or service within their natural environment.

2. Define

At this stage, developers process all data received. It is necessary to organize it and highlight important points. Based on the results, specific, meaningful, and achievable objectives are set.

Note: Personas are fictional characters, which you create based upon your research in order to represent the different user types that might use your service, product, site, or brand in a similar way. Creating personas helps the designer to understand users' needs, experiences, behaviors and goals.



3. Ideate

At this stage, the task is to generate as many different ideas as possible to solve the problem focused on at the previous step. However, it is better to avoid obvious solutions as they can divert the group's attention from some creative solutions and reduce the probability of innovation.

An interesting result can be achieved when people with different experience levels take part in the project at this stage. Obviously, ideas turn out to be as different as possible.

4. Prototype

We select the most suitable ideas and create models (prototypes) to be tested. Prototypes should be simple. It would be best to develop several options and come out with an optimal solution. The main task is to test the idea and get the initial user experience. As a rule, new ideas are generated and old ones are improved in the process of prototype creation.

5. Test

Testing is the stage when feedback from users is received. Developers should clearly understand what they want to test: which interaction areas, which problem areas.

At this stage, we receive feedback from users telling us about the prototypes we have already developed, check if our idea works the way we intended it to work and if users receive the expected experience.

It is very important first to create a prototype, not a product. The probability that the target audience will dislike something in it is very high. If it were a ready product, it would be difficult to redevelop it.

Design Thinking Concept as Applied by Airbnb

The project creators got acquainted at university, moved to San Francisco together, and shared a rented comfortable and spacious loft-style apartment there.

In 2007, the city held a design conference and hotel prices shot up tenfold. The guys had a simple business idea: to buy a few air beds and receive their colleagues at their home. To find the guests, they launched the airbedandbreakfast.com website.

Both friends realized that their idea has great potential because conferences, football matches, and concerts are held around the world, and that means a temporary shortage of affordable housing eventually is the case everywhere.

Joe and Brian used the empathy method which they studied in their design school and asked themselves:

- What do people do when they travel?
- How can anybody tell them the way from an airport to an apartment?
- How do we recommend our favorite dinner place in a nearby street?

They updated their website and now offered accommodation, breakfast, and even networking: thus, a simple landlord has turned to be a friend. **Using the design thinking principles, they solved the problem of distrust to "strangers": reviews from both sides eliminated this barrier.**

Now the Airbnb capitalization reached $31 billion, and 200 million people use the company's services.

Summary

Viewing the world from other people's perspective, being aware of their desires and challenges they face, as well as understanding their needs are the main principles the design thinking technique is built upon.

It makes no difference whether you apply this approach to develop a product, an online resource, or a service — these are the very five simple and clearly structured steps which will resolve all the emerging issues and help you find the right solution.

Additional Information:

https://www.youtube.com/watch?v=-ySx-S5FcCI (Design thinking process)
https://www.youtube.com/watch?v=YXZamW4-Ysk (Brainstorming techniques)
https://www.youtube.com/watch?v=3nOS7CliDo0 ("Yes, and" technique)
https://careerfoundry.com/en/blog/ux-design/stage-two-design-thinking-define-the-problem/ (Define problem statement)

Appendix 2.2
Factor Rating Method

Steps:

1. Determine relevant and important factors.
2. Assign a weight to each factor, with all weights totaling 1.00.
3. Determine common scale for all factors, maybe 0-5, 0-10, or 0-100.
4. Score each alternative.
5. Multiply factor weight by score factor; and then add up scores for each alternative.
6. The alternative with highest total weighted average should be chosen.

Prototype 1:

Factors	Weights	Customer1	Customer2	Customer3	Customer4	Customer5	Average
A	0.30	4	5	2	3	2	3.20
B	0.20	4	4	2	4	2	3.20
C	0.20	5	3	3	1	4	3.20
D	0.15	1	2	4	4	4	3.00
E	0.15	3	3	4	5	5	4.00
	1.00	3.60	3.65	2.80	3.25	3.15	**3.29**

Prototype 2:

Factors	Weights	Customer1	Customer2	Customer3	Customer4	Customer5	Average
A	0.30	4	5	5	3	3	4.00
B	0.20	4	2	2	4	3	3.00
C	0.20	4	3	4	1	5	3.40
D	0.15	4	2	4	4	5	3.80
E	0.15	4	1	1	5	2	2.60
	1.00	4.00	2.95	3.45	3.25	3.55	**3.44**

In conclusion, the prototype 2 should be chosen because of higher total weighted average.