ENGLISH - VIETNAMESE AERONAUTICAL ENGINEERING TEXTBOOK COVER DESIGNS: A CONTRASTIVE STUDY FROM THE THEORY OF MULTIMODAL DISCOURSE ANALYSIS

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Abstract: This mixed-method study compares and contrasts Vietnamese and English aeronautical engineering textbook covers using Multimodal Discourse Analysis (MDA) by Kress and van Leeuwen's (2006) visual grammar framework. By examining the cover designs through interactive meaning (social distance and perspective) and compositional meaning (information value, framing, and salience) across 25 covers per language, the study unveils similarities in the use of photographic distances for social relationships, predominance of subjective angle images, framing techniques, top-down layouts, and consistent title/author elements. However, differences arise in the book cover design choices based on the visual grammar framework. Vietnamese covers often depict impersonal distance via long shots, while English covers favour oblique angles, suggesting detachment. Vietnamese covers segregate images and text, whereas English covers integrate images as backgrounds. Vietnamese covers include more supplementary metadata like genre and audience. These differences highlight cultural, stylistic, and marketing influences across linguistic contexts, demonstrating that integrating multimodal and contrastive analyses deepens understanding of textbook covers as complex semiotic systems and informs the development of more effective, culturally relevant designs to enhance aeronautical engineering education.

Keywords: contrastive analysis, Multimodal Discourse Analysis (MDA), aeronautical engineering textbooks, visual grammar, cover design

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NGHIÊN CỨU ĐỐI CHIẾU THIẾT KẾ BÌA GIÁO TRÌNH KĨ THUẬT HÀNG KHÔNG TIẾNG ANH VÀ TIẾNG VIỆT THEO PHÂN TÍCH DIỄN NGÔN ĐA PHƯƠNG THỨC

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Tóm tắt: Nghiên cứu này tiến hành đối chiếu thiết kế bìa giáo trình kĩ thuật hàng không tiếng Việt và tiếng Anh thông qua sử dụng cách tiếp cận phân tích diễn ngôn đa phương thức của Kress và van Leeuwen (2006). Qua việc khảo sát thiết kế bìa sách theo nghĩa tương tác (khoảng cách xã hội và thái độ) và nghĩa bố cục (giá trị thông tin, khung hình và tính nổi bật) trên 25 bìa ở mỗi ngôn ngữ, nghiên cứu này đã chỉ ra những điểm tương đồng trong việc sử dụng khoảng cách chụp ảnh để thể hiện mối quan hệ xã hội, sự chiếm ưu thế của hình ảnh chụp từ góc chủ quan, các kỹ thuật tạo khung hình, bố cục theo chiều từ trên xuống dưới và các yếu tố nhất quán về tiêu đề/tác giả. Tuy nhiên, cũng có những khác biệt về lựa chọn thiết kế bìa sách theo những tiêu chí về ngữ pháp hình ảnh. Bìa tiếng Việt thường miêu tả khoảng cách phi cá nhân thông qua các góc chụp toàn cảnh, trong khi bìa tiếng Anh ưu tiên các góc chụp nghiêng, thể hiện sự tách biệt. Bìa tiếng Việt còn có xu hướng tách biệt hình ảnh và văn bản, trong khi bìa tiếng Anh lại sử dụng hình ảnh làm nền. Không những vậy, bìa tiếng Việt bao gồm nhiều yếu tố siêu ngôn ngữ hơn như: thể loại và đối tượng sử dụng. Những khác biệt này nêu bật sự ảnh hưởng về văn hóa, phong cách và tiếp thị trong các bối cảnh ngôn ngữ khác nhau, chứng tỏ rằng việc kết hợp phân tích đa phương thức và đối chiếu cung cấp hiểu biết sâu sắc hơn về bìa giáo trình với tư cách là một hệ thống tín hiệu phức tạp, qua đó giúp thiết kế tài liệu giảng dạy kỹ thuật hàng không hiệu quả và phù hợp hơn về văn hóa.

Từ khóa: phân tích đối chiếu, phân tích diễn ngôn đa phương thức, giáo trình kỹ thuật hàng không, ngữ pháp hình ảnh, thiết kế bìa sách

1. Introduction

The design and layout of book covers, particularly those of textbooks, have long been a subject of academic interest and analysis. Researchers have employed various theoretical frameworks to understand the meaning-making process behind the visual and textual elements used in book cover designs. Existing research predominantly examines general or literary book covers, such as Wu and Wu's (2021) study of *Jane Eyre book covers*, Imansari and Harti's (2023) analysis of feminist fiction, and Muhassin et al.'s (2022) investigation of English language textbooks. Studies like Li et al. (2018) and Sunderland and McGlashan (2012) also focus on educational and social representations. However, there remains a notable gap in research specifically addressing specialized technical textbook covers, particularly in niche fields like aeronautical engineering.

This study addresses a research gap by conducting a contrastive analysis of English and Vietnamese aeronautical engineering textbook cover designs using the Multimodal Discourse Analysis (MDA) approach. It specifically employs Kress and van Leeuwen's (2006) visual grammar framework, rooted in Systemic Functional Linguistics (SFL), to investigate how interactive and compositional meanings are conveyed through the interplay of metadata and

imagery on these covers.

The choice of aeronautical engineering textbooks is significant for several reasons. Firstly, these textbooks represent a specialized domain with unique discourse and visual conventions, which may differ from those in more general or literary texts (Azkiyah et al., 2021). Secondly, comparing textbook covers in two languages, English and Vietnamese, allows us to explore the cultural and linguistic influences that shape the design and meaning-making process in different contexts (Guo & Feng, 2017).

This research aims to compare the interactive and compositional meanings in English and Vietnamese aeronautical engineering textbook covers and how metadata (e.g., title, author, genre, audience) shapes the communicative function. The specific objectives of the study are to analyze the role of visual elements, such as photographic techniques and layout, in conveying interactive and compositional meanings on textbook covers; to examine how metadata, such as title, author, genre, and audience, varies across aeronautical engineering contexts in English and Vietnamese covers; and to conduct a contrastive analysis, highlighting the similarities and differences in cover designs between the two languages.

The findings of this study will contribute to the existing literature on MDA, particularly in the realm of specialized textbook design. Moreover, the contrastive analysis of English and Vietnamese aeronautical engineering textbook covers will provide insights into the cultural and linguistic factors that shape the visual representation of technical knowledge in different educational contexts (Halliday, 2004; Royce, 2007). These insights may inform the design and development of more effective and culturally relevant textbooks, ultimately enhancing the learning experience for students in the field of aeronautical engineering.

2. Literature Review

2.1. Theoretical Background

This study employs MDA as the primary theoretical framework to analyze the visual elements of aeronautical engineering textbook covers. Additionally, it integrates metadata analysis theories to examine how textual and structural information on the covers contributes to meaning-making. Finally, the study adopts a contrastive analysis framework to compare and contrast the covers of English and Vietnamese textbooks. By synthesizing these approaches, the study creates a robust and multidimensional theoretical framework to explore how visual and metadata elements interact across cultural and linguistic contexts.

At the heart of this research lies MDA, developed by Kress and van Leeuwen (2006), which extends Halliday's Systemic Functional Linguistics (SFL) to analyzing semiotic modes beyond language. SFL views language as a system of choices that enable meaning-making across three metafunctions: ideational, interpersonal, and textual. These metafunctions explain how language constructs reality, enacts relationships, and organizes messages coherently (Halliday & Matthiessen, 2014). Though the focus of this study is not linguistic analysis, the SFL metafunctions are relevant because they have been adapted to multimodal contexts by Kress and van Leeuwen. For instance, visual designs, like language, can represent ideas (ideational), establish relationships (interpersonal), and organize information (textual). This conceptual shift from purely linguistic to multimodal semiotics forms the basis of MDA, allowing the analysis of images, colors, and spatial layouts as meaning-making tools (O'Halloran, 2008).

Kress and van Leeuwen (2006) introduced MDA as a framework for studying visual grammar, focusing on how images and semiotic resources convey meaning. Adapting Halliday's SFL, they defined three core aspects of visual grammar: representation, interaction, and composition. Representation addresses ideational meaning, analyzing how visual elements depict reality or communicate subject matter. Interaction corresponds to interpersonal meaning, exploring how visuals establish relationships between viewers, creators, and subjects through gaze, perspective, and social distance. Composition, tied to textual meaning, examines the spatial organization of elements guided by information value, salience, and framing principles. These principles determine how elements are positioned, emphasized, and connected to create a coherent design. Together, these aspects form a comprehensive framework for understanding how visuals communicate meaning and engage audiences (Kress & van Leeuwen, 2006).

While MDA focuses on visuals, it does not address metadata like titles, subtitles, authorship, and institutional logos. To address this, the study incorporates metadata analysis theories from publishing and information science (Matthews & Moody, 2007). Metadata serves functional and symbolic roles: it provides essential information about a book's content and conveys authority through design and placement, such as bold titles or institutional logos signaling credibility (Darling, 2019). This study analyzes metadata alongside visuals and explores how these elements interact to create cohesive, multimodal textbook covers.

To address the study's comparative nature, a contrastive analysis framework is employed to systematically compare the covers of English and Vietnamese textbooks. Contrastive analysis, rooted in linguistic and cultural studies, identifies similarities and differences between two systems to uncover underlying patterns and influences (Bui, 2008). In this context, it is used to explore how cultural and linguistic similarities and differences shape the design of textbook covers in the two contexts. The contrastive framework allows the study to investigate how visual and metadata elements differ in their treatment of professional identity, cultural norms, and educational priorities. This contrastive approach strengthens the research by situating the findings within broader cultural and professional frameworks, highlighting how textbook covers are not only visual products but also cultural artifacts shaped by their linguistic and societal environments.

Integrating MDA, metadata analysis, and contrastive analysis forms a robust framework for this study. MDA examines how visual elements like images, colors, and layouts convey meaning (Kress & van Leeuwen, 2006). Metadata analysis addresses textual and structural elements that organize and frame the design (Matthews & Moody, 2007; Darling, 2019). Contrastive analysis explores how cultural and linguistic differences shape design choices (Bui, 2008). This combination bridges visual and textual analysis while situating findings in cultural contexts, offering insights into how English and Vietnamese textbook covers meet audience expectations.

The framework captures the interplay between visuals and metadata while contextualizing findings culturally. MDA emphasizes visual grammar; metadata analysis highlights organizational roles; contrastive analysis provides cross-cultural depth. Together, they offer a comprehensive understanding of textbook covers as multimodal artifacts.

Practically, this framework informs the creation of effective, culturally sensitive designs. Academically, it advances MDA in technical and cross-cultural contexts, addressing gaps in existing research.

2.2. Review of Previous Studies

MDA has emerged as a powerful approach to understanding how visual and textual elements communicate meaning across various contexts. Rooted in theoretical frameworks by Kress and van Leeuwen, researchers have explored book covers as complex communication tools extending far beyond visual decoration.

Cultural representation has been a significant focus of scholarly investigation. Wu and Wu's (2021) study of *Jane Eyre book covers* in China demonstrated how visual elements reflect social changes over time. Complementing this research, Li et al.'s (2018) analysis of translated volume covers provided deeper insights into ideological influences by carefully examining book size, information value, salience, and framing. Their work highlighted the intricate ways visual grammar helps understand interactions between visuals and text in conveying complex cultural messages.

Imansari and Harti's (2023) research on translated feminist fiction covers further expanded this understanding, revealing how sociocultural contexts profoundly shape visual representations. These studies collectively illustrate that book covers are rich texts encoding nuanced cultural narratives and social meanings, serving as more than simple aesthetic objects.

Design strategies have attracted considerable research attention. Wantoro's (2020) and Dixon et al.'s (2015) investigation of book-series covers demonstrates how designers strategically use visual constants and variables to create cohesive yet distinctive presentations. This approach unveils the sophisticated methods of visual communication that maintain a consistent identity while communicating specific content.

The digital transformation of visual communication has introduced new research perspectives. Darling's (2019) work on digital book cover representation explored how cover components adapt in online environments, highlighting the evolving nature of visual design in the digital marketplace. Zhang et al.'s (2021) exploration of generative neural networks for book cover design further expanded the methodological boundaries of visual communication research.

Educational materials have emerged as a crucial area of MDA. Muhassin et al.'s (2022) study of English textbook covers and Sunderland and McGlashan's (2012) analysis of picturebook covers demonstrated the potential of examining how visual elements function in educational contexts.

The existing body of research, however, reveals significant limitations. Li et al.'s work notably pointed out the lack of reader reactions and interviews with decision-makers, potentially compromising the analysis's objectivity. Most studies have predominantly focused on literary texts, social science publications, and general educational materials, leaving a substantial gap in understanding visual communication in technical education.

Cross-linguistic comparisons of textbook cover designs, particularly between English and Vietnamese contexts, remain an underexplored research area. While previous studies have examined cultural representations in book covers, few have systematically investigated how technical knowledge is visually communicated across different linguistic and cultural environments.

The proposed research aims to bridge these critical gaps by conducting a comprehensive MDA of aeronautical engineering textbook covers in English and Vietnamese. By integrating insights from previous studies and addressing their methodological limitations, the research seeks to provide a nuanced understanding of how visual design, cultural context, and technical communication intersect in educational textbook covers. The study aspires to offer novel insights into the complex relationship

between visual representation and the communication of technical knowledge across different cultural and linguistic contexts.

3. Methodology

This study employs a mixed-method approach integrating MDA, metadata analysis, and contrastive methodology to investigate the design features of aeronautical engineering textbook covers in Vietnamese and English contexts. Combining these methods allows the study to explore visual and textual elements while identifying cross-cultural patterns and differences.

The research examines a total of 50 textbook covers, comprising 25 Vietnamese covers and 25 English covers. The sample follows Sandelowski's (1995) qualitative sampling guidelines, which recommend medium-sized datasets to ensure variability and detailed analysis. Vietnamese covers were sourced from institutions such as the Air Defence - Air Force Academy and Hanoi University of Science and Technology. English covers came from globally recognized publishers like McGraw-Hill and Springer. The sampling process involved accessing academic libraries, institutional archives, and faculty recommendations to ensure credibility and relevance.

The analysis integrates three methods. First, MDA is the primary tool for analyzing visual elements. This approach focuses on interactive meaning and compositional features (Kress & van Leeuwen, 2006), as technical textbook imagery often prioritizes informative over representational meaning. The interactive meaning examines social distance (e.g., perspective and shot type) and attitude (e.g., angle or viewpoint). At the same time, gaze is excluded due to its rarity in technical contexts (Dimopoulos et al., 2003). Compositional features explore how elements are spatially arranged through information value (e.g., top-bottom and left-right placement), salience (e.g., the use of color, size, and contrast), and framing (e.g., borders and spacing that connect or separate elements). Second, metadata analysis investigates textual components such as titles, subtitles, logos, and typographic choices to uncover their functional and symbolic roles in reinforcing a book's identity. The study categorizes cover information into primary (author, title, publisher/logo) and supplementary (book type, target audience, compilation purpose, ownership entity) based on metadata frameworks (Matthews & Moody, 2007). Volume and edition details are excluded as they fall outside the study's focus on metadata's communicative role in textbook cover design. Third, contrastive analysis, guided by Bui's (2008) framework, compares Vietnamese and English covers to highlight cultural and contextual influences on design strategies.

For data collection, textbook covers were systematically selected, digitized, and organized into two datasets: Vietnamese and English. This ensured consistency and facilitated systematic analysis.

The data analysis was conducted in three steps. First, visual analysis focused on interactive meaning and compositional features using MDA. Second, metadata elements were identified and analyzed for their communicative significance. Finally, findings from the two datasets were compared to identify similarities and differences in visual and textual design strategies, with cultural influences examined through contrastive analysis.

By combining these methods, the study bridges visual and textual analysis while offering cross-cultural insights into textbook cover design. This approach ensures a holistic understanding of how aeronautical engineering textbooks communicate expertise and educational intent across Vietnamese and English contexts.

4. Contrastive Analysis of Vietnamese-English Aeronautical Engineering Textbook Covers

4.1. Front Cover Features of Vietnamese Aeronautical Engineering Textbooks

4.1.1. Interactive Meaning

The interactive features of textbook covers demonstrate how designers establish a relationship between the viewer and the subject represented on the cover. Specifically, the analysis focuses on social distance and attitude. Since technical covers rarely include gaze as a visual element (Kress & van Leeuwen, 2006), this study excludes gaze from its analysis.

4.1.1.1. Social Distance

This element reflects how aeronautical engineering textbooks communicate varying degrees of intimacy or detachment with the audience, as presented in Table 1.

Table 1

Distribution of Social Distance Techniques in Vietnamese Aeronautical Engineering Textbook Covers

|	Personal/ Close-up shot	Social/ Medium shot	Impersonal/ Long shot
Quantity	1	7	17

In the covers of Vietnamese aeronautical engineering textbooks, all three methods of creating social distance are used, though varying degrees, as illustrated in Figure 1. At a close-up distance (intimate), only cover V008 seems to show that the viewer is positioned at a distance where they can directly interact with the air compressor. In contrast, cover V001 depicts social distance at a medium level, where the viewer observes the airplane from a pretty close distance while also seeing the background behind it. The medium shot (social) design is applied in 7 out of the 25 covers studied. The most frequently used method is the long shot (impersonal), which accounts for about two-thirds of the total covers, with cover V004 as an example.
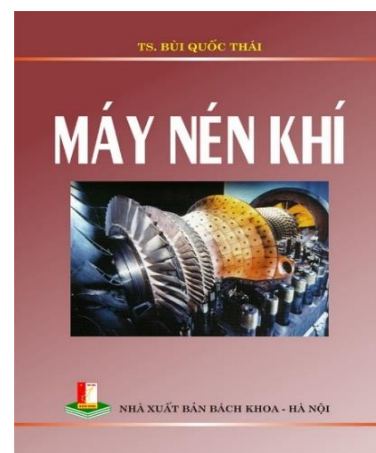
Figure 1

Vietnamese Aeronautical Engineering Textbook Cover Illustrations in V001, V004, and V008
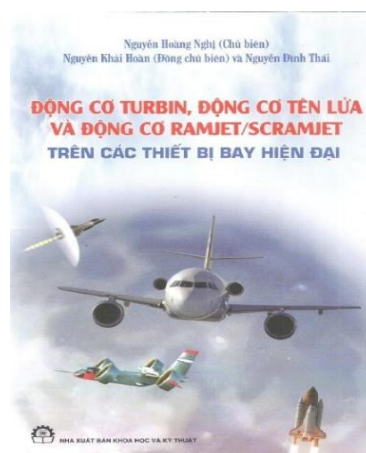

| **V001** | **V004** | **V008** |

4.1.1.2. Attitude

In the context of multimodal communication, attitude elements refer to how the angle or perspective of an image establishes the relationship between the represented entity and the viewer (Kress and van Leeuwen, 2006). This theoretical framework will be applied to analyze how the angle or perspective in the cover designs of the textbooks influences the viewer's perception and engagement with the content.

Figure 2

Vietnamese Aeronautical Engineering Textbook Cover Illustrations in V010, V021, and V022

| V010 | V021 | V022 |
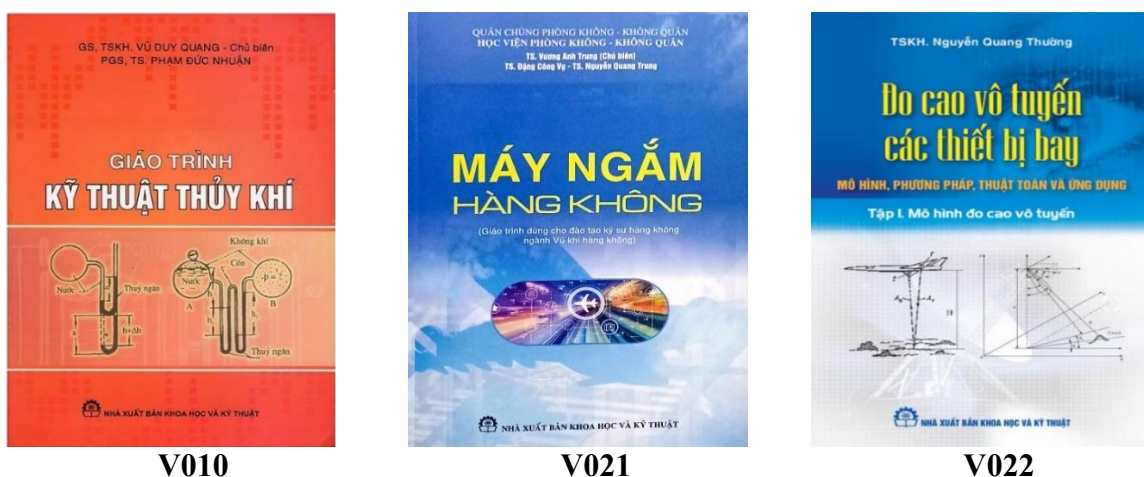
From the cover analysis, only 3 out of the 25 images surveyed belong to the Objective images group, where two images on covers V010 and V022 are captured at a directly frontal angle, showing action orientation, as they belong to the 2d-technical diagrams category. Cover V021 symbolizes an airplane captured at a perpendicular top-down angle within the range of an electronic sighting device, indicating observer orientation. The 22 other covers use subjective images captured at various angles, as shown in the table below. The three covers are presented in Figure 2 above.

Table 2

Distribution of Angles in Vietnamese Aeronautical Engineering Textbook Covers

	High angle/ Viewer power	Eye-level angle/ Equality	Low angle/ Participant power
Frontal angle/ Involvement	2	5	3
Oblique angle/ Detachment	9	1	2

From Table 2, we can see that the most frequently used image angle is the high oblique angle, with 9 cover images depicting viewer power detachment, followed by 5 covers belonging to the frontal eye-level angle group, indicating equality involvement, suggesting a deliberate choice to convey detachment and viewer involvement, respectively.

4.1.2. Compositional Meaning

This section analyzes the composition of Vietnamese aeronautical engineering textbook covers using Kress and van Leeuwen's (2006) visual grammar framework. The analysis focuses on three compositional factors: information value, salience, and framing.

4.1.2.1. Framing

The framing technique in the textbook cover layouts determines the connection or separation between elements through borders or color contrasts (Kress & van Leeuwen, 2006). This choice reflects the designer's intention to guide the viewer's perception of the cover's content.

Figure 3

Vietnamese Aeronautical Engineering Textbook Cover Illustrations in V003, V015, and V023

| **V003** | **V015** | **V023** |

In Cover V015 (Figure 3), the designer employs a white frame and contrasting colours: dark blue, green, and brown, to create a clear separation between different types of signals and the systems they represent. This technique, used in four of the 25 analyzed covers, visually distinguishes the images from the rest. Another frequently used technique in 13 out of 25 covers is color contrast to separate images from text. For example, Cover V003 (Figure 3) uses white, light blue, and dark red to separate the title, illustration, and publisher.

However, about one-third of the covers studied use illustrative images as backgrounds for textual elements such as titles, authors, or publishers, reflecting the integration technique described by Kress and van Leeuwen (2006). Cover V023 (Figure 3) exemplifies this approach, where, despite the color contrast, overlapping techniques are used to connect the illustration with the textual content. Table 3 summarizes the frequency of these framing techniques.

Table 3

Framing Techniques in Vietnamese Aeronautical Engineering Textbook Covers

	Disconnection			**Connection**			**Total**
	Segregation	**Separation**	**Visual contrast**	**Overlap**	**Integration**	**Visual rhyme**	
Quantity	4	0	13	1	7	0	25

Therefore, colour and framing also contribute to conveying part of the content of the textbook cover layout, making sections more explicit according to the designer's intention to integrate or segregate information layout.

4.1.2.2. Information Value

A book cover's visual and textual elements arrangement significantly influences how readers perceive and interpret the content. Vietnamese aeronautical engineering textbook covers demonstrate deliberate compositional strategies to balance idealistic and practical

information.

The orientation and placement of elements or information determines the composition of a book cover. Vietnamese aeronautical engineering textbook covers generally adopt vertical and horizontal layouts to convey meaning. Vertically, information is arranged from top to bottom, where elements at the top represent ideal or general information, and those at the bottom signify practical or specific information (Kress & van Leeuwen, 2006). Horizontally, the left side often presents given (known) information, while the right side introduces new information.

Figure 4

Vietnamese Aeronautical Engineering Textbook Cover Illustrations in V007, V011, and V016

| **V007** | **V011** | **V016** |
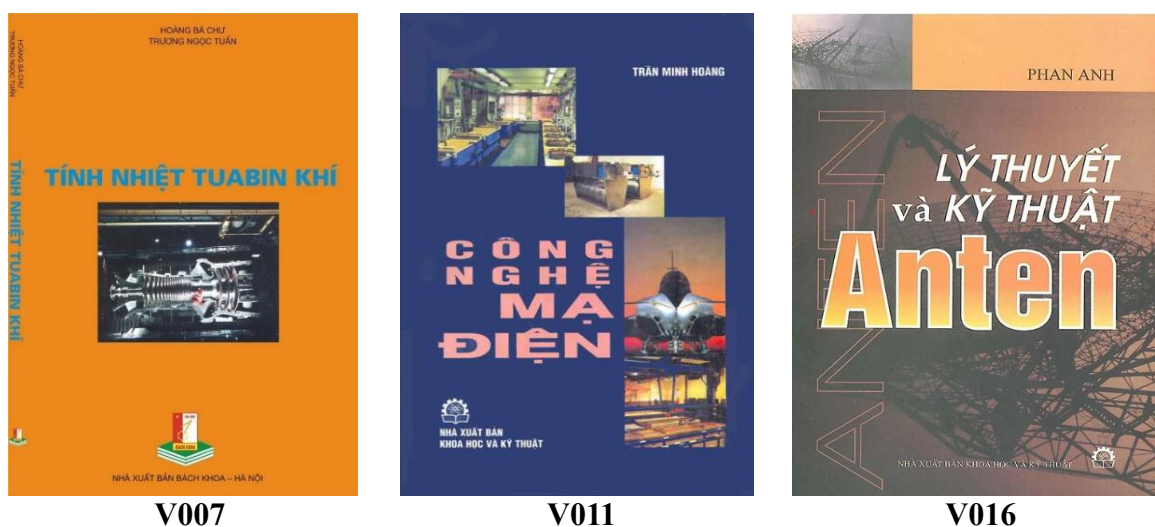
A survey of 25 Vietnamese aeronautical engineering textbook covers revealed that all utilize a top-down layout. Books are often designed vertically, offering advantages regarding space utilization and convenience (Zhang et al., 2021). Regarding the relationship between the title and illustration, the title is positioned above in 23 of 25 books. In contrast, the illustration is positioned below, reflecting the idealistic nature of the title and the practicality of the illustration. However, there are exceptions, such as in book cover V023 (Figure 3), where the author places the illustrative image above, indicating the idealism of drone control.

In contrast, the method of controlling orchestras is depicted as practical. The book covers V011, V012, V015, and V016, combining both horizontal (left-right) and vertical (top-down) layouts, referred to as Triptych (Kress & van Leeuwen, 2006). The book cover title, V011, as in Figure 4, is placed on the left, indicating that electrodeposition technology is old information. At the same time, the airplane image on the right depicts the application of electrodeposition technology in aerospace materials science as new information.

In short, Vietnamese textbook cover compositions primarily follow a top-down orientation, balancing idealistic and practical information placement. Some covers blend horizontal and vertical layouts, demonstrating the deliberate design strategies employed to communicate effectively with readers.

4.1.2.3. Salience

The salience of images relies on cues such as size, sharpness, and colour contrast. Salience prioritizes essential elements in the composition of textbook covers, such as old versus

new, idealistic versus practical, or centre versus margin. Designers employ various methods to highlight images and language on covers to attract readers' attention, such as the contrast between white and black borders, which is considered highly salient (Wantoro, 2020).

Salience is used to capture readers' attention. Cover designers highlight essential information using colour contrast, size, and sharpness. Images occupy more space than other information on covers. Studies show that images and colours also contribute significantly to conveying the meaning of the cover, helping to create meaning for the cover composition, as seen in covers V007 and V009. The contrast between yellow and blue on cover V007, as in Figure 4, and blue combined with white on cover V009 helps highlight the information in the cover composition. Furthermore, salience using size is evident in cover V001, where the prominent airplane image occupies a large portion of the cover, and in covers like V008 and V016 (Figure 4), where large font titles contribute to catching the reader's eye.

Overall, the compositional structures of Vietnamese aeronautical engineering textbook covers exhibit diverse designs and flexible layouts, effectively organizing information to communicate meaning and engage readers.

4.1.3. Metadata

The metadata analysis examines key information on aeronautical engineering textbook covers, such as title, author, publisher, and target audience. It highlights how these elements structure the design to communicate the book's identity and purpose, aligning with the expectations of the intended readership and enhancing the cover's effectiveness in conveying technical and educational content.

Through analysis and statistics, all three primary information elements appear on the covers of the 25 textbooks studied. Regarding supplementary information, two books, V001 and V003, indicate the genre on the cover as belonging to the group of fluid mechanics. Additionally, five book covers indicate that the target audience is university students and postgraduates in engineering disciplines. The hosting institution is represented on the covers, accounting for 16%, while the compilation purpose as university textbooks is shown on 5 book covers, constituting 20%. The books are compiled for specific target audiences and purposes. They are owned by educational institutions because one of the sources of teaching materials used as textbooks is organized and used by universities for teaching purposes (VNU, 2012). Specific data is described in Table 4.

Table 4

Metadata Content on Vietnamese Aeronautical Engineering Textbook Covers

	Primary information			Supplementary information			
	Title	Author	Publisher	Genre	Beneficiary	Purpose	Owning organization
Quantity	25	25	25	2	5	4	5
Frequency	100%	100%	100%	8%	20%	16%	20%

4.2. Front Cover Features of English Aeronautical Engineering Textbooks

4.2.1. Interactive Meaning

4.2.1.1. Social Distance

Like aeronautical engineering textbooks published in Vietnamese, English aeronautical engineering textbooks also utilize various photographic distances to create a social distance

between the reader/viewer and the subject. Through analysis, the covers of English aeronautical engineering textbooks also employ all three methods of creating social distance, close shot, medium shot, and long shot, to represent personal, social, or impersonal social distances. However, the usage rates of these methods are pretty evenly distributed; medium shot and long shot are used relatively equally, with 10 and 9 book covers, respectively, while the close shot is slightly less common, as in Table 5.

Table 5

Distribution of Social Distance Techniques in English Aeronautical Engineering Textbook Covers

	Personal/ Close-up shot	Social/ Medium shot	Impersonal/ Long shot
Quantity	6	9	10

4.2.1.2. Attitude

The analysis of perspective in the covers of English aeronautical engineering textbooks reveals how the angle or viewpoint shapes the relationship between the viewer and the subject. Subjective and objective perspectives are used across the covers, with subjective images creating a more personal or engaging connection. These images are often framed horizontally or vertically, establishing varying degrees of interaction. The framing choice influences how viewers perceive the subjects; some covers offer a more intimate or interactive feel, while others adopt a more detached, objective stance. Notably, all the illustrated images on the covers of these textbooks fall into the subjective category, particularly when analyzed by perspective, as shown in Table 6 below.

Table 6

Distribution of Angles in English Aeronautical Engineering Textbook Covers

	High angle/ Viewer power	Eye-level angle/ Equality	Low angle/ Participant power
Frontal angle/ Involvement	1	3	1
Oblique angle/ Detachment	10	4	6

From the table, it can be observed that images taken from oblique angles, accounting for a significant proportion at 80% of the surveyed covers, depict detachment, with 10 covers shot from high angles demonstrating viewer power. Thus, the analysis underscores the predominance of subjective images, particularly those captured from oblique angles, in English aeronautical engineering textbook covers, reflecting a sense of detachment and viewer power.

4.2.2. Compositional Meaning

4.2.2.1. Framing

Like Vietnamese textbook cover compositions, English textbook covers also use frames to differentiate information between images and language. In Covers E002 (Figure 5) and E006, designers utilize borders, colour contrast, and size to highlight important information. Frames are also used to convey idealistic and real concepts, thus directing readers' attention to crucial information. Designers use images to convey information instead of words, with 11 out of 25 covers employing this technique. Overlapping techniques are also utilized, as seen in Covers E011 and E013. Table 7 below demonstrates the frequency of framing techniques.

Table 7

Framing Techniques in English Aeronautical Engineering Textbook Covers

	Disconnection			Connection			Total
	Segregation	**Separation**	**Visual contrast**	**Overlap**	**Integration**	**Visual rhyme**	
Quantity	5	0	7	2	11	0	25

4.2.2.2. Information Value

Placing elements of the cover in different positions yields different information values for the cover. Like Vietnamese textbook covers, English textbook covers predominantly utilize a top-down layout. Horizontal arrangements combined with vertical layouts, called triptych, appear in Covers E09 and E011 (Figure 5). Cover E009 illustrates old content with an image of aerodynamics while emphasizing new information with the book "Advanced Computational Fluid and Aerodynamics." Hence, designers select layouts to attract customer attention effectively and emphasize the cover message.

Figure 5

English Aeronautical Engineering Textbook Cover Illustrations in E002, E011, E020, and E022

| **E002** | **E011** | **E020** | **E022** |

In addition to individual cases, cover designs employing vertical layouts often showcase the relationship between the title and illustration, with most titles appearing above to convey idealistic information, while images portray real information. However, E003, E015, E018, and E022 (Figure 5) are arranged oppositely, with illustrations placed above and titles below to highlight the specific content of the book title.

4.2.2.3. Salience

Like Vietnamese textbook covers, English textbook covers also utilize salience to attract readers' attention; for example, cover E020 employs sharpness, contrast, and large font sizes to highlight important information. Most covers use images occupying more space than language to capture readers' attention. Both white and light blue are commonly used to create contrast in English-language published book covers, much like in Vietnamese book covers. These two colours symbolize the sky, the published books' domain.

4.2.3. Metadata

The text elements on the print book cover play several vital roles in conveying information and attracting readers. Surveying 25 English aeronautical engineering textbook covers, only the title and author appear in all of them. The title is the most prominent text

element on the cover, and it grabs the reader's attention and conveys the central theme or focus of the book.

Table 8

Metadata Content on English Aeronautical Engineering Textbook Covers

	Primary information			Supplementary information			
	Title	**Author**	**Publisher**	**Genre**	**Beneficiary**	**Purpose**	**Owning organization**
Quantity	25	25	17	1	0	0	0
Frequency	100%	100%	68%	4%	0%	0%	0%

Additionally, the author's name is essential for identifying the work's creator and building recognition among readers familiar with the author's previous works. However, the publisher's name or logo appears only 17 times, accounting for 68% of the analyzed covers. It could be that the author is very well-known, or the book title is the main selling point. The publisher may highlight the author's name and book title prominently on the front cover, omitting their imprint. Sometimes, publishers or book designers choose a minimalist or artistic cover design that omits the publisher's name on the front (Haslam, 2006). This is often done to create a cleaner, more visually striking cover without too many text elements. Consequently, supplementary information is almost absent from these covers. Specific details are outlined in Table 8.

4.3. Similarities and Differences in Contrastive Analysis of Aeronautical Engineering Textbook Covers Published in Vietnamese and English

4.3.1. Similarities

The covers of Vietnamese and English aeronautical engineering textbooks reveal striking similarities in their multimodal design strategies and metadata elements, showcasing a sophisticated approach to visual communication that transcends linguistic boundaries. Both covers strategically utilize interactive and compositional techniques to convey meaning beyond the textual elements.

Regarding interactive features, the covers demonstrate a refined use of photographic distances. By thoughtfully manipulating social distance through close-up, medium, and long-range shots, designers create nuanced relationships between the viewer and the subject. Notably, both covers of Vietnamese and English textbooks predominantly feature subjective image perspectives, capturing subjects from specific angles that deliberately shape viewer engagement and perception.

Compositional elements in both language contexts reflect a high level of visual grammar. Designers exhibit remarkable flexibility in arranging information, using vertical, horizontal, and combinatorial layouts to guide the reader's interpretation. Framing techniques, such as color contrasts, border delineations, and strategic overlaps, serve as sophisticated semiotic resources that differentiate and connect visual and textual elements. The consistent use of a top-down layout positions the title as the conceptual anchor, symbolically representing ideational content above the more practical illustrative elements. Moreover, salience techniques further enhance the visual communication strategy. By deliberately using color contrasts, typographic scale, and visual sharpness, designers establish hierarchical visual structures that direct the reader's attention and convey varying levels of information value.

Concerning metadata features, a notable similarity is that both Vietnamese and English

aeronautical engineering textbook covers consistently display the book's title and author's name, which are considered primary information elements.

These similarities highlight the sophisticated, internationally convergent nature of aeronautical engineering textbook cover design, where visual communication strategies remain remarkably consistent across Vietnamese and English contexts.

4.3.2. Differences

Despite the similarities in compositional techniques, several notable differences exist between Vietnamese and English aeronautical engineering textbook covers. In interactive features, Vietnamese textbook covers frequently employ long shots (depicting an impersonal relationship), accounting for about two-thirds of the covers analyzed. In contrast, English textbook covers more evenly distribute the usage of medium and long shots. Additionally, while Vietnamese textbooks utilize frontal and oblique angles to convey involvement and detachment, English textbooks predominantly feature oblique angles (80% of covers), reflecting a sense of detachment and viewer power.

Regarding compositional features, Vietnamese textbook covers more frequently utilize the triptych layout (combining horizontal and vertical arrangements) than English covers. Moreover, while Vietnamese textbook covers often employ segregation techniques (e.g., frames, colour contrast) to separate images from text, English covers favour integration techniques, using images as backgrounds for text elements. Comparing 25 samples of aeronautical engineering textbook covers selected as teaching materials at university education institutions published in Vietnamese and English, the author of this study found few differences. Currently, Vietnamese book cover designers actively integrate into the international arena, using similar theoretical frameworks and purposes, thus resulting in similar aeronautical engineering textbook cover compositions using nearly identical language and image means. However, there are differences in the frequency of using image frames to separate information between images and text in Vietnamese and English aeronautical engineering textbook covers. Vietnamese textbook cover designers use more techniques to separate images and text, accounting for about two-thirds of the researched covers. At the same time, this proportion in English editions is approximately 50% of the analyzed covers.

In terms of metadata features, Vietnamese textbook covers more frequently include supplementary information, such as the book's genre, target audience, compilation purpose, and owning organization, compared to English covers. The reason for this difference is that Vietnamese textbooks are often compiled for specific target audiences and purposes, and they are owned by educational institutions because one of the sources of teaching materials used as textbooks is organized and used by universities for teaching purposes. Furthermore, while the publisher's name or logo is consistently present on Vietnamese textbook covers, it appears less frequently (68% of covers) on English textbook covers, possibly due to design choices or the prominence of the author's name and book title.

These differences likely stem from cultural, stylistic, and marketing considerations specific to each language and publishing context, reflecting the unique approaches and priorities in textbook cover design for Vietnamese and English aeronautical engineering publications.

5. Discussion

The results of this contrastive study reveal fascinating insights into how Vietnamese and English aeronautical engineering textbook covers employ semiotic resources to convey

meaning. By integrating Kress and van Leeuwen's (2006) MDA framework and metadata analysis, the research illuminates the sophisticated strategies publishers use to engage readers through visual communication.

A key observation is the shared utilization of photographic distances and angles across both language contexts to establish social relationships with viewers, as described by Kress and van Leeuwen (2006). The prevalence of subjective image perspectives invites readers into the visual narrative, fostering a sense of involvement regardless of cultural context. However, notable distinctions arise in the compositional techniques favoured by Vietnamese and English cover designers.

Vietnamese covers frequently depict subjects at impersonal distances through long shots, potentially reflecting cultural tendencies towards formality or objectivity in specialized engineering domains, as noted by Dimopoulos et al. (2003). In contrast, the predominance of oblique angles in English covers may signal a deliberate stylistic choice to convey detachment or viewer power dynamics, aligning with individualistic cultural orientations described by Guo and Feng (2017). These divergent representational strategies hint at deeper cultural underpinnings shaping visual communication norms across linguistic boundaries.

The compositional features further highlight intriguing cross-cultural contrasts. Vietnamese textbook covers tend to segregate images and text through framing techniques like borders and colour contrasts, reflecting a structured, segmented mindset. Conversely, English covers embrace an integrative approach, seamlessly blending images as dynamic backgrounds for textual elements, aligning with a more holistic, visually oriented design philosophy often associated with Western cultural contexts (Matthews & Moody, 2007; Haslam, 2006).

The metadata inclusions offer additional insights into cultural priorities. Vietnamese covers' frequent incorporation of supplementary details like genre, audience, and ownership potentially stems from a strong emphasis on specificity and contextual grounding within academic and institutional frameworks. In contrast, English covers prioritize concision, focusing primarily on the essential title and author elements, reflecting a more minimalist, universally appealing aesthetic approach (Zhang et al., 2021).

These distinctions underscore the profound influence of cultural conventions on educational material design. While adhering to universal principles of visual communication, publishers strategically navigate cultural sensibilities. The research reveals a delicate balance between global design standards and local communication preferences, demonstrating how visual rhetoric adapts to diverse cultural contexts.

Notably, the study also highlights significant areas of convergence. Vietnamese and English covers consistently employ key design strategies: top-down layouts, strategic color contrast, and typographic emphasis. These shared approaches suggest an emerging global language of academic book design, particularly in specialized technical domains like aeronautical engineering.

The findings contribute to understanding visual communication as a complex, culturally mediated process. They illuminate how textbook covers function as protective wrappers and sophisticated communication artifacts that negotiate meaning across linguistic and cultural boundaries. By examining these intricate design choices, the research provides valuable insights for designers, publishers, and educators seeking to create more effective, culturally sensitive educational materials.

6. Conclusion and Suggestions

This study employed a mixed-method approach to conduct a contrastive analysis of aeronautical engineering textbook covers published in Vietnamese and English. Examining 25 covers from each language, it investigated the interactive and compositional meaning conveyed through the strategic integration of visual and textual elements. The findings reveal similarities like utilizing photographic distances to establish social relationships, a predominance of subjective image angles, framing techniques, top-down layouts, and the inclusion of book titles and author names. However, notable differences emerged in specific design choices and element prioritization across the two linguistic contexts.

Vietnamese covers more frequently depict an impersonal social distance through long shots. They tended to segregate images and text, while English covers favoured oblique angles reflecting detachment, viewer power, and integrated images as backgrounds for text. Additionally, Vietnamese covers often included supplementary metadata like genre, target audience, and compilation purpose, likely influenced by specific educational and institutional contexts. These differences underscore the influence of cultural, stylistic, and marketing considerations on cover design across diverse publishing environments.

By integrating MDA by Kress and van Leeuwen and metadata analysis, this research deepens our understanding of textbook covers as complex semiotic artifacts shaped by cultural contexts. It sheds light on design choices related to visual rhetoric, motivated by cultural conventions or communicative goals across linguistic contexts. The study utilizes a suitable framework for evaluating the cultural relevance of educational materials design to develop engaging, culturally-tailored covers - crucial for enhancing cross-cultural awareness in specialized domains like aeronautical engineering education.

The findings offer valuable insights for textbook designers and publishers, highlighting the importance of considering linguistic and cultural factors in visual communication. These insights equip designers with tools for creating nuanced, cross-cultural communication through strategic cover choices, ensuring that elements like images, colors, and layouts resonate with the intended audience. By understanding how these semiotic resources influence interpretations, designers can create more effective and culturally relevant covers. Ultimately, this can enhance student learning experiences and engagement, particularly in specialized fields like aeronautical engineering. As visual communication continues to evolve in the digital age, this research becomes increasingly vital for publishers, educators, and designers alike.

Potential future research avenues include exploring student/instructor perceptions of culturally tailored versus standardized covers, extending MDA across engineering sub-disciplines or cultural contexts beyond Vietnamese and English, and investigating other publishing paratexts to uncover rich, culturally nuanced meaning-making strategies.

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APPENDICES

Appendix 1. List of Aeronautical Engineering Textbooks Published in Vietnamese

Code	Books
V001	Vũ, Q. H., Đinh, T. H., Vũ, Đ. Q., Nguyễn, P. K., Lê, X. T., & Hoàng, K. D. (2023). *Nhập môn kĩ thuật hàng không*. NXB Đại học Bách khoa Hà Nội.
V002	Trần, V. T., Trần, T. T., & Lê, T. T. (2016). *Giáo trình khí động lực học*. NXB Xây dựng.
V003	Lê, Q. (2016). *Cơ học vật bay*. NXB Đại học Bách khoa Hà Nội.
V004	Nguyễn, H. N., Nguyễn, K. H., & Nguyễn, Đ. T. (2023). *Động cơ turbin, động cơ tên lửa và động cơ ramjet/scramjet*. NXB Khoa học Kĩ thuật.
V005	Phạm, V. K. (2023). *Các hệ truyền động thủy lực lái của máy bay*. NXB Đại học Bách khoa Hà Nội.
V006	Nguyễn, T. M. (2009). *Giáo trình máy bay trực thăng*. NXB Đại học Bách khoa Hà Nội.
V007	Hoàng, B. C., & Trương, N. T. (2006). *Tính nhiệt tuabin khí*. NXB Đại học Bách khoa Hà Nội.
V008	Bùi, Q. T. (2023). *Máy nén khí*. NXB Đại học Bách khoa Hà Nội.
V009	Huỳnh, V. H., Lê, M. Đ., Nguyễn, Q. T., Huỳnh, T. T., Nguyễn, V. T., Nguyễn, V. Đ., & Dương, Đ. N. (2021). *Kỹ thuật thủy khí nâng cao*. NXB Khoa học Kĩ thuật.
V010	Vũ, D. Q., & Phạm, Đ. N. (2013). *Giáo trình kỹ thuật thủy khí*. NXB Khoa học Kĩ thuật.
V011	Trần, M. H. (1998). *Công nghệ mạ điện*. NXB Khoa học Kĩ thuật.
V012	Lương, N. L. (2011). *Cơ học thủy khí ứng dụng*. NXB Đại học Bách khoa Hà Nội.
V013	Đỗ, T. T., Hán, T. T., Hà, D. T., Phương, X. Q., & Phạm, V. T. (2012). *Kỹ thuật radar và định vị bằng vệ tinh*. NXB Đại học Bách khoa Hà Nội.
V014	Trần, V. T., Bùi, Đ. K., & Nguyễn, V. M. (2011). *Hệ thống dẫn đường vệ tinh*. NXB Khoa học Kĩ thuật.
V015	Đỗ, T. T. A., Nguyễn, H. H., & Hoàng, M. S. (2021). *Tín hiệu và hệ thống*. NXB Đại học Bách khoa Hà Nội.
V016	Phan, A. (2007). *Lý thuyết và kĩ thuật anten*. NXB Khoa học Kĩ thuật.
V017	Trần, M. T., & Đào, T. H. Đ. (2006). *Các hệ thống vệ tinh định vị toàn cầu và ứng dụng*. NXB Giáo dục.
V018	Nguyễn, V. K., & Trịnh, A. V. (2007). *Thông tin số*. NXB Giáo dục.
V019	Tô, V. D., Nguyễn, V. S., & Phạm, V. U. (2006). *Động học bay và nguyên lý dẫn khí cụ bay điều khiển một kênh*. NXB Khoa học Kĩ thuật.
V020	Vương, A. T., & Nguyễn, Q. T. (2023). *Các hệ thống điều khiển tên lửa hàng không* (Tập 1). NXB Khoa học Kĩ thuật.
V021	Vương, A. T., Đặng, C. V., & Nguyễn, Q. T. (2023). *Máy ngắm hàng không*. NXB Khoa học Kĩ thuật.
V022	Nguyễn, Q. T. (2022). *Đo cao vô tuyến các thiết bị bay* (Tập 1). NXB Khoa học Kĩ thuật.
V023	Đỗ, T. H., Nguyễn, T. T. H., & Nguyễn, T. M. (2023). *Kỹ thuật điều khiển nhóm cho đàn robot tự hành*. NXB Khoa học Kĩ thuật.
V024	Trần, V. Đ. (2011). *Lý thuyết cánh* (Tập 1). NXB Khoa học Kĩ thuật.
V025	Nguyễn, Đ. D., & Lê, M. H. (2021). *Xử lý ảnh số viễn thám*. NXB Khoa học Tự nhiên và Công nghệ.

Appendix 2. List of Aeronautical Engineering Textbooks Published in English

Code	Books
E001	Newman, D. J. (2002). *Interactive aerospace engineering and design*. McGraw-Hill.
E002	Collicott, S. H., Valentine, D. T., Houghton, E. L., & Carpenter, P. W. (2016). *Aerodynamics for engineering students* (7th ed.). Butterworth-Heinemann.
E003	Hull, D. G. (2007). *Fundamentals of airplane flight mechanics*. Springer.
E004	Mattingly, J. D., & Boyer, K. M. (2016). *Elements of propulsion: Gas turbines and rockets* (2nd ed.). American Institute of Aeronautics.
E005	Green, W. L. (1986). *Aircraft hydraulic systems: An introduction to the analysis of systems and components* (1st ed.). John Wiley & Sons.
E006	Newman, S. J. (2012). *The foundations of helicopter flight*. Elsevier.
E007	Novillo, E. (2016). *Turbine thermal appraisal: A spreadsheet approach*. Xlibris.
E008	Theodore, G. (2018). *Compressor performance: Aerodynamics for the user* (3rd ed.). Butterworth-Heinemann.
E009	Paul, G. T. (2016). *Advanced computational fluid and aerodynamics*. Cambridge University Press.
E010	Tucker, B. (1997). *Aircraft fluid power systems*. Endeavor Books.
E011	Siddiqui, T. (2015). *Aircraft materials and analysis*. McGraw-Hill.
E012	Raol, J. R., & Singh, J. (2023). *Flight mechanics modeling and analysis* (2nd ed.). CRC Press.
E013	Stimson, G. W. (1998). *Introduction to airborne radar*. SciTech Publishing.
E014	Tooley, M., & Wyatt, D. (2007). *Aircraft communications and navigation systems: Principles, maintenance, and operation* (1st ed.). Routledge.
E015	Tooley, M. (2002). *Aircraft digital electronic and computer systems* (3rd ed.). Routledge.
E016	Fenn, A. J. (2017). *Electromagnetics and antenna technology*. Artech House Publishers.
E017	Roddy, D., Linwood, J., & Long, D. G. (2024). *Satellite communications* (5th ed.). McGraw-Hill.
E018	Mahmoud, M. S. B., Guerber, C., Larrieu, N., Pirovano, A., & Radzik, J. (2014). *Aeronautical air-ground data link communications*. Wiley-ISTE.
E019	Shneydor, N. A. (1998). *Missile guidance and pursuit: Kinematics, dynamics and control* (1st ed.). Woodhead Publishing.
E020	Yanushevsky, R. (2018). *Modern missile guidance* (2nd ed.). CRC Press.
E021	Arrasmith, W. W. (2015). *Systems engineering and analysis of electro-optical and infrared systems*. CRC Press.
E022	Wyatt, D. (2015). *Aircraft flight instruments and guidance systems: Principles, operations, and maintenance*. Routledge.
E023	Mohanty, S. N., Ravindra, J. V. R., Narayana, G. S., Pattnaik, C. R., & Sirajudeen, Y. M. (2023). *Drone technology: Future trends and practical applications* (1st ed.). Wiley-Scrivener.
E024	Volodin, P. (2022). *Blade element rotor theory*. CRC Press.
E025	Schowengerdt, R. A. (2006). *Remote sensing: Models and methods for image processing* (3rd ed.). Academic Press.