International scientific-practical conference

INNOVATIONS IN PUBLISHING, PRINTING AND MULTIMEDIA TECHNOLOGIES 2023

Book of abstracts

Kaunas, 2023

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ISBN 978-9955-27-628-9

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THE TECHNOLOGY IS NOT THE PROBLEM, BUT THE PEOPLE

Christian Greim
Mittweida University of Applied Sciences, Germany

Relevance and aim of the research: The problem is, that we have to operate enormously diverse and complex systems. In contrast, in particular the manufacturers of prepress software suggest that everything is very simple. According to the motto: "If it looks good on screen it will also look good in print." The fact that between screen and print there is the whole extremely complicated colour management is suppressed. And so even professional customers from graphic agencies think: "If it looks good on screen, I've done my job!" That this is only about half the job, is known to anyone who has to rework PDF files in the graphic arts industry. And so we have the problem that from the outside everything in the printing industry is quite simple, almost trivial. But from the perspective of the inside, the exact opposite is the case.

Methodology: Unfortunately, it is not a strictly scientific lecture, but an attempt firstly to summarise many discussions with professionals and end users, especially the contradictions between what end users expect and what print industry can deliver. Secondly, an attempt to identify the causes that have led to this completely distorted perception on the part of end users, especially the problematic role that the software industry has played and is playing in this. And thirdly, an attempt to suggest ways out of this difficult situation.

Results: There can hardly be any clear solutions in the problem area described. A difficult part is already seeing the problem at all. And only then can the arduous path begin, no longer simply to buy the next best solution from a well-known supplier, but instead to look for smart, small alternatives where the expertise does not disappear from one's own company to the suppliers, but where know-how is developed together with the supplier or perhaps even with colleagues. This means that expertise must be retained in the companies and, if possible, even expanded.

Conclusions & practical implications: A good way of implementing the results is the much wider use of open source software than before and the use of alternative offers in the hardware area of colour management. Furthermore, as teachers committed to the print industry, we need to convince graphic arts teachers that print technology is an absolutely necessary subject in their institutions.

Keywords: printing industry, monopolies, opensource, higher education

THE NEW U.S. GRAPHIC COMMUNICATION CURRICULUM: AN EXPANDED TAXONOMY

Kenneth Macro
California Polytechnic State University, United States of America

Relevance and aim of the research: Survey and analysis of changing curricula of existing Graphic Communication programs within various degree granting educational institutions within North America. While some programs have closed, others have shifted curricular focus to adapt to newer disciplines entering the traditional graphic communication space, most specifically in User-Interface (UI) and User-Experience design. This phenomenon has changed the direction of ACCGC, an accreditation body in North America that reviews and provides accreditation to any participating programs in Graphic Communication.

Methodology: Descriptive research, surveys, focus groups.

Results: The ACCGC has developed a Taxonomy of Disciplines that assist in determining criteria for accrediting newer and evolving Graphic Communication programs.

Conclusions & practical implications: The results of this study are provided in the form of a new taxonomy of criterion specific to content offered for the development of learning objectives in establishing graphic communication curricula of the future.

Keywords: Curriculum, Graphic Communication, Learning Objectives, Taxonomy

SHAPING THE EUROPEAN FUTURE WITH BOOKS

Csaba Horvath[1], Tamas Loos[2], Kornel Remete[2]
[1]Óbuda University, [2]Alfoldi Nyomda Co., Hungary

Relevance and aim of the research: By analyzing recently published scientific publications, conference presentations and expert reports, the authors tried to formulate the challenges and trends that will characterize the future coexistence of European people with printed books.

Methodology: The authors summarize and analyze the expected trends in the world of books, which will also be the key driving forces of the book market and book production: lifestyle and habit changes characteristic of the period of the Covid-19 epidemic; issues of sustainability, the rise of digital printing, the ever-widening use of electronic end-user products, and the exploding costs of production.

Results: Book publishers and book manufacturers alike must face the environmental challenges of climate change and the resulting increasingly strict EU regulations. Changing consumer habits generate new market solutions. Book retail is no longer strictly separated into physical and online areas. The rise is moving in the direction of omnichannel solutions. The evolving mentality and attitude of the alpha generation to printed communication requires special attention. Further changes are also expected in the production of books, focusing on the special needs of customers. The proportion of «on demand» production continues to increase. Attractive design solutions come to the fore. Printing houses are increasingly becoming media providers in direct contact with consumers and content produced by consumers (eg. photo books).

Conclusions & practical implications: Common targets and actions can be formulated to European publishers and printers (Peter Kraus vom Cleef, 2021).

"Work together to contribute to achieving the United Nations Sustainable Development Goals".

"Improve our ecosystem together by thinking in networks and reducing our carbon footprint" – for example, by using more AI to "better forecast what we need to print".

"Lobby together for our cultural and creative sector"

"Collect together all the research, studies and information about the benefits of reading – and particularly reading in print" – and publish it alongside other stakeholders like booksellers and librarians.

Keywords: Future of print, book production, book market trends, sustainability

FLEXO AND SCREEN PRINTING OF GRAPHENE/MULTIWALL CARBON NANOTUBE HYBRID

Vassiliki Belessi[1,2], Apostolos Koutsioukis[3], Theodora Philippakopoulou[1] and Vasilios Georgakilas[2]
[1] Department of Graphic Design and Visual Communication, University of West Attica, Athens, Greece
[2]Department of Electrical and Electronic Engineering, University of West Attica, Greece
[3]Department of Materials Science, University of Patras, Greece

Printing has gained increasing attention due to its definitive contribution on the wide field of flexible printed electronics and the great interest of researchers for functional printing. Screen printing, gravure, flexography and inkjet are the technologies that mainly used in printed electronics. Functional printing demands the development of new functional materials and inks, such as conductive materials/inks that possess an outstanding position in the field of printed electronics. Up to now, commercial conductive inks are based mainly on metal nanoparticles (e.g silver), conductive polymers and carbon black or graphite while special interest has given to graphene and graphene derivatives. Graphene is a flat monolayer of carbon atoms tightly packed into a two-dimensional (2D) honeycomb lattice.

In this work, two water-based conductive inks based on a highly water dispersible graphene/multiwall carbon nanotube hybrid (G/MWNT-f-OH) were prepared. One of them was formulated for screen printing and the other for flexography. For both of them, commercial resin emulsions were used in order to reduce their cost and improve their printability. The printing inks were fully characterized by various methods such as Scanning Electron Microscopy, electrical measurements and rheological measurements. Printing tests were carried out on various papers, common or special (coated and uncoated). The as prepared inks were storage stable and highly conductive. The sheet resistance (Rs) of the inks was below 100 Ohm/sq. Print quality was comparable with that of conventional commercial inks and the sheet resistance of the printed patterns was below 1 kOhm/sq. The lower Rs values were received for the screen printed patterns instead of flexo printed patterns. For flexography, the relashionship between ink-carrying volume of the cells of the anilox roll and printing quality was investigated. Also various printing tests with the water-based carbon nanoink was carried out

and found that the effect of printing pressure and printing speed had no significant effect on print quality. It was found that pre-inking increases the print density and so the amount of the applied ink. Thus, it was selected for all experiments the use of the anilox with volume 16 ml m-2 and pre-inking before all experiments.

Usually, stabilizers are required to prevent agglomeration in most inks and also post-print treatments are necessary, but none of them was demanded in this work. The key property for achieving high quality conductive printing inks was mainly the excellent dispersibility of the graphene/multiwall carbon nanotube hybrid.

Keywords: Conductive inks, Graphene, Flexography, Printing substrates, Screen printing

THE INFLUENCE OF ARTIFICIAL INTELLIGENCE ON MEDIA CULTURE, ART AND ANIMATION

Vladislav Berežok
Kauno kolegija Higher Education Institution, Lithuania

Relevance and aim of the research: The relevance of the research lies in the growing impact of artificial intelligence on various creative industries, including media culture, art, design, and animation. As AI technologies continue to advance, it becomes increasingly important to understand the implications of this development and the potential opportunities it presents for artists and designers. The aim of this research is to explore the ways in which artificial intelligence is transforming these fields and what this means for the creative industry. Specifically, the research will investigate the possibilities of AI application in animation, art, and design, and how it can be leveraged to enhance the creative process and produce new forms of art and design.

Methodology: The methodology of this research will involve reviewing literature on the influence of artificial intelligence on media culture, art, and design, as well as the possibilities of AI application in animation. Additionally, we will analyze case studies and interview experts in the field to explore how AI works with art and animation.

Results: As a result of our research, we found that artificial intelligence has had a significant impact on media culture, art, and design. AI has opened up new possibilities for creativity, allowing artists and designers to create new forms of expression and expand the boundaries of traditional art forms. In animation, AI has enabled faster and more efficient production processes, allowing for greater creativity and innovation in the field. However, there are also concerns about the potential ethical and social implications of AI, particularly in terms of job displacement and the loss of human creativity and expression. Overall, our research highlights the need for careful consideration and management of AI in the context of media culture, art, and design.

Conclusions & practical implications: The research revealed that artificial intelligence has a significant impact on media culture, art, and design, especially in the realm of animation. AI technology provides new possibilities and tools for artists and animators to create innovative and engaging content. However, the use of AI in art and animation raises ethical questions and concerns about the role of human creativity and artistic expression.

The findings of this research suggest that artists and designers should consider incorporating AI technology into their creative processes to enhance their work and explore new possibilities. However, caution should be taken to ensure that the use of AI in art and animation does not diminish the importance of human creativity and artistic expression. Moreover, there is a need for further research and development of AI tools that can improve the quality and efficiency of the creative process while respecting ethical and artistic values.Click or tap here to enter text

Keywords: AI, animation, design, art

WOMEN IN PRINT: A SPECIAL CASE STUDY

Katalin Orgovan
Patria Printing House Co., Hungary

Relevance and aim of the research: The author - who is a woman, a printer and senior manager holding several positions - was recently influenced by (positive and negative) influences that motivated her to examine the situation of women in the printing industry more deeply and scientifically.

Methodology: Initially, she focused on Patria Printing House, the company she managed as CEO. This company is one of the biggest Hungarian printing houses with the large capacity and significant historical traditions. As a pilot project, it offered itself as a good subject for revealing the characteristics of women working in the company with statistical examination. Although similar surveys have been carried out from time to time at this company, with simplified tests recording the conditions in a snapshot-like manner, but due to the lack of process analyses, they had no influence on the company's decision-making. The research provided the opportunity to examine trends and internal development directions arising from the position and work of women, which had/have a significant impact on the life of the company.

Results: The research puts emphasis on examining the proportion of women working in management positions, since these managers have the most pronounced effects on the company's effectiveness. Based on the data, it can be clearly demonstrated that the proportion of women has increased significantly, especially in higher management positions, while in the middle management also stagnates. There was a question as to whether this diversity influences the company's effectiveness, so the subject of investigation is whether the development of sales revenue and balance sheet profit is related to the activities of female managers. Over the past 10 years, the ratio of the printing company's balance sheet profit to sales revenue has consistently increased. From this, it is not possible to draw the conclusion that this was due to the positive effect of the proportion of women in top management, but it can be concluded that efficiency has not deteriorated. The question of equal pay for the same position, without gender discrimination, is important. It was also established that gender discrimination does not apply in manager positions at the company, all female managers are paid the same salary as men. As part of the survey, an inventory of “male-dominant” jobs was also

carried out, examining the reasons that resulted/result in their creation. Is it necessary to eliminate them, do they violate gender equality?

Conclusions & practical implications: The findings gave the company's management new impulses regarding the future shaping of the company's internal life. For the author, the main result of the project is the motivation that it is worth broadening this research in the Hungarian printing industry, even in a wider international perspective.

Keywords: gender equality, statistical analyses, women in print

EVALUATION OF FINE ARTS PRINT PRODUCTION WITH ARTIST'S OPINIONS IN CONTEMPORARY ART PRESENTATION

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Fine art printmaking is a process of creating multiple original artworks through various printing techniques such as etching, lithography, and screen printing. Printmaking art has been a significant art form for many contemporary artists, and its value lies in its ability to reproduce artworks in a way that is more affordable and accessible to a broader audience. Especially in the last three decades, rapidly digitalizing technology has also provided radical changes in many social-cultural and economic fields. As a reflection of this, it has caused a change in the presentation of contemporary art and caused the formation of an innovative attitude that transforms-triggers the productions of the artists. With this innovative attitude, fine art prints, which are accepted as one of the original printing methods, are becoming more and more popular among contemporary artists in order to bring their works to wider masses and to generate additional income. It has indisputable that digital technologies are a new tool with a different line for artists, apart from the usual art presentation of contemporary art, which is indifferent quests with an innovative attitude in every period. From this point of view, in addition to the dynamic visual presentations in different spaces and platforms in the contemporary art environment, the innovative attitude that fine arts print artworks bring to the behaviour of today's artists should also be considered.

This work, it is aimed to investigate the effects of digital printing technology and fine art prints on today's artists. Based on this view, in-depth interviews were conducted with 15 participants consisting of well-known artists and art institution managers in the contemporary art scene in Turkey. In the findings obtained; Content analysis, one of the qualitative methods, was used. By summarizing the views of contemporary artists against fine arts print works, it was ensured that the concepts and relations that could be explained with a theoretical expression were determined with the interpreted data.

Keywords: Fine art Prints 1, Contemporary Artist in Turkey 2, Printmaking Art 3, Art production 4

THE IMPORTANCE AND IMPROVEMENTS OF THE SPEED OF VIDEO EDITING

Kristupas Vitkus
beCreatives, Wyoming, United States of America

Relevance and aim of the research: Staying competetive and maximizing your income as a video editor

Methodology: Experiments and observation.

Results: Identified key performance indicators and churn rate factors, comparison of editing speeds with and without the good practices used by video editing agencies, practices used now and coming in near future.

Conclusions & practical implications: In order to stay competitive in video editing industry, key performance indicators (KPIs) are quality and speed. While quality is what many video editors aim for, turnaround time is even more important for the industry and remains the number one of KPI. It's important to be innovative and use the best practices in the industry while have a vision for future uses of technology. These practices will not only decrease the time spent per video or per client but can also be significant for quality improvement. As turnaround time is the reason number one for cancellation of video editing services, it plays a huge role in client retention. Retaining clients drives more revenue and sustainable and constant income. Being able to edit videos faster and of a higher quality will result in bigger prices and an increasing number of clients, retention of current clients, attraction of new ones, and consistency.

Keywords: Video, editing, turnaround, income, practices, templates, AI

DEFECT "GHOSTING" AS A RESULT OF THE INTERACTION OF PAPER AND PRINTING INK. FROM SCIENCE TO PRODUCTION

Dagnija Vanaga[1], Martins Kalnins[1], Uldis Grinfelds[2], Arnis Treimanis[2]
[1]Institute of Polymer Materials, Riga Technical University,
[2]Latvian State Institute of Wood Chemistry, Latvia

Relevance and aim of the research: The Ghosting (GH) occurs frequently, in both the sheet and web offset printing. It increases the costs of production and negatively influences the quality of the printed products, which brings to customer complaints and their refusal to pay.

Methodology: For the study of the GH 7 sorts of papers were selected. For the experimental printing 4 different printing inks were used in two printing-presses. The experimental printing resulted in 77 printed samples that provided the required measurements for the research. The study was conducted in three directions. The impact of paper, ink and technology on the occurrence of the GH defect was studied. Measurements of density and physical properties were conducted for paper, drying time and wear resistance (abrasion resistance) for printing ink, technological effects – one sided or bilateral printing and with lacquering or without lacquering. The experts rated the intensity of the GH of all the printed samples graduation by their intensity: Invisible, Visible, Highly visible. SPSS database was used for statistical evaluation of the results. The three-factor analysis of variance was applied to determine the influence of factors and assess their relevant impact.

Results: In the experiment, it was observed that no natural based Magenta ink sample of any manufacturer was completely dry after 72 h. GH was observed on every paper sample tested and the extent of the defect differs significantly. A higher risk of getting a "ghost" was on paper samples #1 and #4; lowest risk – on paper samples #2, #3 and #5. The statistical analysis of the data shows that there are significant differences in the ink causing the GH. Highest risks were related to ink sample #1 and #2, medium risk – with the ink sample #4, while the lowest risk of producing GH occurred using ink sample #3. Varnish coating on the wet ink from the two-component chemical interaction enhances ink solidification, and thus reduces GH of printing.

Conclusions & practical implications: It has been observed that varnish application and ink factors interact in 3 ways – without application of varnish, applying varnish on "dry ink", applying varnish on wet ink. Minimal risk to obtain GH is varnish "application by wet". GH happens throughout

the speed of paint drying and following the fast printing of lower side can minimize GH at the critical material combinations. Prevention of GH confirms that GH is matt/gloss effect in offset of supply of sheet paper. In order to provide even the pace of printing-paint drying, it is necessary that on the sheet of paper exact reactive paint layer expels necessary oxygen amount inside of the stacking. Without changing the printing technology, it won't be possible to avoid from the potential appearance of the GH defect.

Keywords: Ghosting (GH), ink, paper, printing

PECULIARITIES AND METHODS OF STUDENTS' CREATIVE PROJECT ACTIVITIES

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Project activities promote students' responsibility, cooperation and creativity. Each project faces certain constraints, including scope, goals, and available resources. Working within a specific and defined project activity format, students look for ways and opportunities to reveal and express their ideas within a specified period, using particular materials, in order to achieve the goals set. The aim of this works was to analyse the peculiarities and methods of creative project activity, and the roles of the teacher and students.

Methodology: Analytical research and practical investigations.

Results and discussions: This work presents insights on how to help students collaborate and engage in the creative process and methods how to encourage, motivate and unleash everyone's potential. The article analyses the peculiarities and methods of creative project activity, and the role of the teacher in involving and encouraging students to cooperate, work towards common, delegate tasks, and take responsibility.

Conclusions: Project activities allow not only to reveal subject knowledge and own experience, but also to receive "authentic assessment", where not only content knowledge is assessed, but also additional skills such as creativity, collaboration, problem solving and innovation.

Keywords: project, peculiarities, methods, creativity.

NEW POSSIBILITIES OF RESEARCH ON PAPER STACK CUTTING PROCESS BY USING A SPECIAL LABORATORY SINGLE-KNIFE TRIMMER

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Institute of Mechanics and Printing, Poland

Relevance and aim of the research: Cutting of paper stacks is a very complex process, because its workflow depends on many factors related to the material being processed, tools, machine and cutting conditions. Most of known investigations were carried out on specially constructed test stands, which construction significantly differs from the design of cutters used in the production process. For the above reasons, it is necessary to conduct new, comprehensive researches on the cutting processes of books under similar to real production processes conditions using the new possibilities of modern equipment. Our goal is to make additional research of influence of the kinematics of the knife movement on the cutting forces.

Methodology: the researches were made using industrial paper cutting machine Adast MM58 (Czech Republic) equipped with a specially upgraded cutting system. It enables to make researches with different variable parameters of knife motion (angle of knife movement, speed of cutting etc.) The data acquisition system uses hardware and software by National Instruments (USA) and PC. It enables simultaneous recording of three components of cutting force, knife oscillations, stack clamping force and measurement of knife blade wear.

Results: the researches established dependencies of the cutting force components on the knife movement angle and speed. When changing the angle of movement from 70 degrees to approx. 20 degrees, the vertical force component is down by 50..60%, while the horizontal force component increases about twice (when the angle value equals approx. 40 degrees) and then decreases up to the start value. This may indicate that at smaller angles, the mechanics of the process alters, and the cutting takes place with smaller deformations of paper sheets beneath the knife-edge.

Conclusions & practical implications: use of modern enhanced data acquisition system allows obtaining new knowledge about the phenomena occurring during cutting of paper stacks. Our results create the possibility of developing the new cutting machines with reduced both cutting force and energy consumption.

Keywords: cutting, paper stack, angle of knife movement, cutting force

STUDY OF THE INFLUENCE OF THE SURFACE STRUCTURE OF SUBSTRATES ON IMPRINTS QUALITY

Anna Dovhanych, Valentyna Dovhanych
Ukrainian Academy of Printing, Ukraine

Relevance and aim of the research: Modern printing technologies allow the use of a diverse range of materials for printing to satisfy the requirements of the most demanding consumers. However, the quality of the imprint is not always satisfactory. Of course, there can be many reasons: non-observance of technological printing modes, problems related to setting up the operation of the main and auxiliary mechanisms of the printing machine, problems of transporting material through printing and inking unites, etc. One of the problems of obtaining a high-quality imprint in all printing methods is compliance with certain technological requirements regarding the selection of the properties of the printed materials, in particular their surface.

Methodology: Based on the methods of system analysis, hierarchical groups of imprints quality indicators in flexographic and digital printing methods, which ensure high imprints quality, are singled out. Accordingly, studies of the surface topography of imprints on paper and cardboard with and without a chalk coating, as well as on film materials (in flexographic printing technology) were conducted.

Results: The surface topography of imprints on various materials was experimentally investigated. A change in the morphological structure of the substrate surface before and after printing was revealed. It has been studied that the presence of a chalked coating, which changes the parameters of roughness and the area of peaks and valleys on papers and cardboards, has a significant effect on the microgeometry of the surface. The method of surface treatment of film materials also affects the topography of imprints surface. It has been confirmed that with an increase in the number of surface coating layers on the substrates, the roughness parameter decreases significantly. The morphological structure of the surface of the materials before printing is preserved on imprints, but its smoothing is observed to a greater or lesser extent depending on the printing method used to obtain the printed image. Also, the indicators of the surface structure of the imprint are affected by the characteristics of inks, varnishes, the method of imprints finishing, for example, by the lamination. This is confirmed by the results of electron microscopy.

Conclusions & practical implications: Based on the results of experimental studies and taking into account the ISO model, a conceptual model and algorithm for the functioning of imprints quality assurance system were proposed, which take into account the problems associated with the dependence of the parameters of the surface structure of printed materials.

Keywords: imprint, quality, substrate, surface structure, system analysis

THE INFLUENCE OF CO_2 LASER TECHNOLOGY ON THE CUT AND SURFACE QUALITY OF WOOD VENEER

Gitana Ginevičienė, Gytis Baltrušaitis, Žygimantas Kujalavičius, Alma Pocienė
Kauno kolegija Higher Education Institution, Lithuania

Relevance and aim of the research: The purpose of this study is to conduct a review of cut quality based on the literature review of CO_2 laser engraving and cutting to investigate material removal quality related to heat-affected zone, cut edge geometry formation and char formation.

Methodology: Special laser birch plywood (sheet type B) was used for the study. The RD Works V8 software interfaced with the Bodor BCL-MU CO_2 laser was used. The test area of the sample consisted of 160, 20 × 20 mm sized fields affected by laser radiation. 10 percent for research was selected. 100 percent (4–40 W) power and speed combinations of 1 mm/s – 40 mm/s. The quality of the structural properties of the birch plywood was evaluated by the optical microscope Motic SMZ 171 and captured by the camera Invenio 5SII. The charring level of the wood was assessed using a multi-layer system, and classifications of the inspected zones were defined. Measurements were made with a relative humidity and temperature meter FHT100. Measurements were made before engraving, cutting and after using several devices such as Hydrometre Compact A, GMH 3810, Resistive Material Moisture Meter.

Results: Visual qualitative assessment of material removal showed that the amount of localized heat energy and the speed of movement had a different influence on the ablation process. During cutting and engraving with a CO_2 laser, recesses are formed in the plywood exposed to radiation within different parameters. The results confirm that the thickness of the material layer removed during engraving increases with increasing power and decreasing scanning speed. The technological modes of the cutting process affected the notch width. A scale of material removal variation levels was created, based on the obtained experimental results. The carbonation level of the studied objects was evaluated. During laser engraving and cutting, a different kind of geometrical configuration of the slit wall is formed. An optical microscope image showed significant geometric changes based on anisotropic properties and variations between layers of wood veneer. After analyzing the images, it was found that as the laser power increased, the quality decreased, but as the cutting speed increased, the quality improved.

The comparison shows that within the limits of the engraving and cutting conditions, the striation texture becomes smoother as the cutting speed increases. With the same radiation travel speed, with increasing power, the streak pattern becomes disordered. To ensure the quality of the cut, it is essential to determine the optimal combination of speed and power of the laser radiation. Based on the analysis criteria (material removal, cut geometry, carbonization level), it was determined that 9 objects from the sample model of 160 objects under investigation met the set goals

Conclusions & practical implications: It was established that when plywood is exposed to an identical set of laser radiation parameters, different effects are exerted on the quality of the cut. A quality assessment of the carbonation level showed a difference based on the level of edge charring and the number of charred spots in the cut zone between the radiation interaction and bottom plate sides. It was found that the cut with the lowest level of carbonization was obtained by laser cutting with a power of 32–40 W and a speed of 8–10 mm/s, and the edge charring during engraving did not meet the quality indicators, as all objects fell into the class of level of charring with spots. The results showed that the plywood temperature change was more significant after laser cutting compared to the engraving process, but the moisture change was more considerable after laser engraving. The optimal values of laser cutting parameters have been determined.

Keywords: CO_2 laser, birch plywood, ablation, carbonization, cut quality

BIP "Creating and developing cyber security educational content on social networks" (5 ECTS)

The aim of the Intensive Blended Programme is to develop educational and preventive content on cyber security, tailored for development in social networks.

The IBP is targeted for students studying **Multimedia Technology, Advertising Technology, Communication and Marketing.**

Online training: **9-20 October 2023**
"Live training": **23-27 October 2023**

› Objectives:

1. To create content on safe browsing on the Internet and prevention of theft and scams.
2. To create educational and preventive content for the general public, applying acquired knowledge of ICT, cyber security, marketing, and media technologies.
3. To analyse and systemise information related to cyber security.
4. To deepen knowledge and master the principles of communication development.

› Learning outcomes and competences:

1. Development of preventive educational content for dissemination on social networks;
2. Ability to apply knowledge and principles of cyber security, communication, marketing, media technology, and green ideas to the creation and dissemination of preventive educational content;
3. Ability to analyse and sistematise information.

The IBP will consist of online and live training.

› 9-20 October 2023

Online training will be dedicated to mastering the theoretical basics of cyber security and communication; analysing similar communication tools and developing a plan to reach the target audience and retain their attention; identifying social groups to be targeted with preventive information, etc.

› 23-27 October 2023

Live training is for the implementation of the plan and development of preventive content.

› Prerequisites:

Ability to analyse and systematise information. Proficiency in graphic design and video editing. At least a B1 level of English is desirable.

› Registration https://forms.gle/HNnuvMxkkAW4b3dD8

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Programme

Date	Activity		Teacher	Duration in hours	Subject
Online training					
09/10/2023-20/10/2023	Online lectures	TBC	Mindaugas Zmitrulevičius	1,5	Safe passwords
		TBC	Mindaugas Zmitrulevičius	1,5	Phishing attacks
		TBC	Mindaugas Zmitrulevičius	1,5	Social engineering
		TBC	Mindaugas Zmitrulevičius	1,5	Safe browsing
		TBC	Aurika Vaičaitienė	1,5	Social networking, Educational content
		TBC	Gytis Baltrušaitis	1	Creating a physical product
09/10/2023-20/10/2023	Self-study/preparation for live training				
Live training at Kauno kolegija					
23/10/2023-27/10/2023	Live week at KK	23/10/2023	Alma Pocienė Gytis Baltrušaitis		Meeting with participants, discussions
		24/10/2023	Dominykas Repečka		Field trip to the company, workshops
		25/10/2023	Mindaugas Zmitrulevičius		Workshops
		26/10/2023			Workshops
		27/10/2023	Gitana Ginevičienė Viktorija Gudauskaitė		Presentation of projects

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International scientific-practical conference
INNOVATIONS IN PUBLISHING, PRINTING
AND MULTIMEDIA TECHNOLOGIES 2023
Book of abstracts

ISBN 978-9955-27-628-9

Printing, binding *Kauno kolegija Advertising and Media Center,*
Pramonės pr. 20 LT-50468 Kaunas
Layout *Virginijus Valčiukas*
Circulation 40. Order number I-2452