STUDY OF PERIODIC INTERNAL EVALUATION OF DOCTORAL STUDIES

1. General information

1.1 Programme title	Postgradute university study programme in graphic engineering and graphic design
1.2 Programme provider	University of Zagreb Faculty of Graphic Arts
1.3 Issuing institution(s)	University of Zagreb Faculty of Graphic Arts
1.4 Institution(s) of cooperation	
1.5 Discipline of science or art	Technical sciences
1.6 Field of science or art	Graphic technology
1.7 Branch of science or art (if applicable to the doctoral study)	Graphic reproduction processes
1.8 Number of compulsory courses/modules	40 ECTS points
1.9 Number of optional courses/modules within the study	55

1.10 Minimum estimated number of doctoral students admitted: 1	**1.11 Maximum estimated number of doctoral students admitted** For each academic year, at the proposal of the Council of doctoral studies, the Faculty Council shall reach a decision on the admission criteria according to which the maximum number of doctoral students is specified: 30 candidates.

2. Introductory description of the doctoral study programme

2.1 The purpose of the doctoral programme considering the needs of research activity in public and private sector and employment possibilities

Postgraduate doctoral study programme in graphic engineering and graphic designis one of the kind in the Republic of Croatia, as well as the oldest and the most significant in the region. The structure of the doctoral programme unites theory, scientific research and experiences in practice in the area of graphic engineering and graphic product modeling. The aim of the study programme is to qualify the students for a high-level independent research in accordance with international standards. The program ensures theoretical and methodological teaching, however the students are required to conduct primarily authentic research of extreme importance for European research area. Inclusion of students from the area of economy to this doctoral programme enables gradual formation of research and development units in economy.
One of the fundamental aims of the doctoral study programme is observing the needs of graphic industry, creative industries and public sector as to advance socio-economic development by conducting research, which shall stimulate formation of strategic partnership between the Faculty, the University and the economy.

Doctoral research may include interdisciplinary topics as well, related to:

- graphic technology, nanotechnology and environment; graphic product life cycle and recycling processes;
- thermochromic printing ink, materials and techniques of three-dimensional printing, recycled papers and cartons with special emphasis on food packaging materials, functional graphic applications in 2D codes and different types of indicators;
- specifying of reproduction parameters of diverse printing techniques depending on the types of materials and surfaces;
- development and optimisation to diverse models in graphic reproduction;
- environmental sustainability and graphic production processes; sustainable development and environment in the function of graphic design;
- development of digital workflow base as well as of process of ongoing automatic production of image-based information security;
- research in design vs. quality relation of the user experience in the area of print and digital media, as

well as packaging products;
- research in processes of user-oriented design and typographic modeling
- research in ICT services design for people with complex communication needs
- research in quantitative and qualitative evaluation criteria of reproduction processes and graphic product design
- research in symbol design and interpretation in environmental protection

Acquired competencies enable the doctoral students the continuation of research in corresponding research institutions, and they also provide international postdoctoral research possibilities.
Research assistants who have completed their doctoral study full-time, have already met conditions for election to the position of research and research-teaching fellows. Part-time doctoral students are already employed within the field of their profession (various graphic, design and other companies, universities, colleges).
The employment possibilities of doctorate holders in small and mid-sized companies is limited. However, a need for more doctorate holders in larger graphic companies, public and education sector has been noted. Research activities of this kind indirectly generate new jobs and vacancies (e.g. in food industry: the relation between printing techniques in graphic packaging materials and their influence to health and environment; application of *infrared design* in safe printing and graphic design;..).

2.2 Foundation of doctoral study programme on competitive research, new understandings, knowledge and skills

The doctoral study programme is based on the latest research in the field of graphic technology and graphic product modeling. The programme is structured around the final research project and/or research goal that, in some cases, is conducted with new and alternative methods using state-of-the-art research equipment. Partly from PhD tuition fees, partly from own funds and projects, the faculty invests regularly in new research equipment as to keep up with the world trends in the area of research in graphic design and technology. Stimulation of collaboration between different research groups within the Faculty, research groups of other components of the University of Zagreb and an increased mobility of teaching staff has resulted in collaboration with other European researchers and institutions. So, one part of PhD students from the neighbouring countries conducts research with the equipment at the Faculty of Graphic Arts. Similarly, Graphic Arts PhD students also do their measurements in international institutions. The combination of research on various devices and the interdisciplinary approach contribute to the development of new research methods. The list of research equipment of the Faculty of Graphic Arts is available at: http://www.grf.unizg.hr/hr/istraivanja/znanstveni-i-strucni-rad/znanstvena-oprema

Access to online research bases, latest research publications and participation in international conferences with occasional dissemination of knowledge amongst PhD students make a guarantee of innovativeness in research. At the doctoral study programme of the Faculty of Graphic Arts, the PhD thesis supervisor must, next to the general conditions, also meet the provisions of the Bylaws of postgraduate university study in graphic engineering and graphic designof the Faculty of Graphic Arts University of Zagreb (available at: http://www.grf.unizg.hr/hr/o-nama/o-fakultetu/dokumenti-i-propisi), namely, by having published at least one research paper in a journal indexed in databases Science Citation Index (SCI) or Current Contents (CC), and which is relevant to the PhD thesis topic in the last five years. Typically, these papers are jointly published by the PhD student and his/her supervisor. The supervisor must be an active researcher in the scientific area related to the PhD thesis topic. The supervisor can be a researcher from another institution if he/she participates in the teaching programme of this doctoral study, and if the principal institution has stipulated an agreement with that other institution on that specific collaboration.
This collaboration contributes to competitive environment, thus adding to a more rapid creative development and scientific achievements.
Some of the course providers are research project leaders, and the majority of providers participate actively in various research projects on both national and international level.
A large number of research articles published in high-ranking science publications and on conferences points to the relevance of innovativeness in scientific research. All PhD students have published, either independently or in co-authorship, at least one research paper in worldwide recognised journals during their study and work on PhD thesis-related activity.
Find the scientific productivity of the teaching staff in Table 1. below (source: bib.irb.hr).

2.3 Innovativeness of doctoral study programme, namely, the opportunities of the doctoral study programme to create new and relevant knowledge and arts practices

The innovativeness of the doctoral study programme is manifested in the inclusion of PhD students in interdisciplinary research. A certain number of PhD students come from the real sector so the research topics of PhD theses are based on real economic situations, thus offering to research many practical and innovative solutions in the technological and modeling area.
The doctoral programme committee evaluates the innovative character of each suggested topic of research initiated as to enhance the interest and strengthen the methodological approach in the relevant scientific field. Also, international experts are included in the operation of the programme, either as guest lecturers or second supervisors in PhD thesis-related scientific research. In majority of cases, the members of doctoral thesis defence committee are international researchers.
Given that the focus of the doctoral theses in the programme type of Graphic designin creative application of engineering design process is put on the purposes of development of new models, concepts and prototypes, the innovative solutions are the results of such a work method. The innovativeness is based on research of new materials, e.g. in food packaging, research of Croatian script modeling, safe printing, as well as in the field of processes and methods of user-oriented design. Some members of teaching staff have received significant professional and scientific acknowledgements for their innovative research. In 2012, a group of researchers was rewarded the national award for science in the technical field, for their innovations related to *infrared design*.

2.4 Former experiences in implementation of doctoral study programmes.
For the academic year 2011-2012 make an annual report on self assessment (form Dr.Sc.09) and enclose it pursuant to Art. 22. of Bylaws on doctoral studies at the University of Zagreb.
The assessment criteria include: scientific and arts production of members of teaching staff and PhD students, classes, relevance and quality of PhD theses, statistical indicators of study duration, statistical indicators of annual number of new doctorate holders in comparison with the number of PhD students, as well as international collaboration.
Describe past experiences and add indicators in the table below for each academic year, starting from the launch of the programme.

The Faculty of Graphic Arts has a longstanding experience with doctoral studies. University postgraduate research programme „Graphic engineering“ was implemented at the Faculty of Graphic Arts from 1 February 2000 to academic year 2006/2007. There were 6 PhD students at the first year of study, and some 30 members of the teaching staff. Current university postgraduate study programme „Graphic engineering and graphic product modeling“ was initiated by obtaining permission papers from the Ministry of science, education and sports on 3 October 2007, by adoption of the Bylaws and by admission of PhD students in the academic year 2007/2008. The first programme of the doctoral study, established in 1999, was subject to changes in 2005, and as of 2007 the programme has remained unchanged, apart from the retirement of some members of the teaching staff. In 2010, a new Bylaws on doctoral study programme for graphic engineering and graphic designwas adopted at the Faculty of Graphic Arts University of Zagreb, effective to this day. Based on a 13-year long experience and available statistical data, we may conclude that by implementing the new Bylaws and by active efforts of the Doctoral studies committee, the quality of doctoral dissertations has significantly improved.
There were 34 members of the teaching staff in the academic year 2012/2013.
The number of PhD students admitted is significantly different every year and no trend of admission has been noticed. In the academic years 2005/2006 and 2006/2007 a significant increase of PhD students admitted was noticed, which can be explained by increased financial opportunities of the economic sector. Each year there is an equal number of PhD students in both programme types, namely, graphic technology and graphic product modeling. PhD students take jointly the courses of the first semester, whereas the second semester courses are programme type-dependent.
If necessary, classes in eleven courses can be taken in foreign languages.
http://www.grf.unizg.hr/hr/studiji/poslijediplomski-studij/plan-i-program-doktorskog-studija

Teaching staff capacities and space capacities of the Faculty allow for 30 PhD students to be admitted for

study. Average duration of the study course is 3.5 years (from admission to defence of doctoral dissertation). Based on an anonymous survey amongst Graphic Arts PhD students, PhD students are extremely satisfied with the availability of their supervisors (94%); one comment was noted, namely, that the number of PhD students per supervisor should be limited. This was done in the meantime, namely, a supervisor may now have two PhD students at the same time. PhD students are mostly (75%) satisfied with the time dedicated by their supervisors who refer them to research methods and follow their scientific activities.

Forms „DR.SC.04 annual PhD student report on progress" give the possibility to each supervisor for assessment and insight into PhD students' opinions.

Data refer to July 2013

Ac.y.	PhD students admitted	Topics given	Doctorates defended
2004/2005	9	8	3
2005/2006	19	8	3
2006/2007	21	0	8
2007/2008	9	2	1
2008/2009	9	2	1
2009/2010	13	8	3
2010/2011	18	6	8
2011/2012	4	3	(5)
2012/2013	8	3	(5)

2.4 International recognisability of doctoral study programme provider in scientific or arts research, that is in artistic creation

International recognisability of the doctoral study programme has been more pronounced in the last few years due to an increased mobility and exchange of teaching staff and students and due to many international cooperation contracts and agreements. The list of countries and institutions where Faculty of Graphic Arts has signed Erasmus cooperation contract is available at http://www.grf.unizg.hr/hr/o-nama/medjunarodna-suradnja/erasmus-ugovori-201314. Members of the teaching staff participate in expert groups that decide on research topics of priority in the European research area. Also, the teaching staff are included in international projects based on research of new materials and processes, such as research in the area of infrared part of the spectrum that has received many international recognitions and awards. They are also included in the work of a multidisciplinary group whose goal is the development of new services for people with complex communication needs.

International recognisability of the teaching staff at the doctoral study course may be followed through their active participation and presiding in international associations and committees. Faculty of Graphic Arts at the University of Zagreb has cooperated with the following international associations:

- TAPPI (leading association in printing industry and publisher of TAPPI JOURNAL),
- IARIGAI, (International Association of Research Organisations for the Printing, Information and Communication Industries),
- TAGA, Technical Association of the Graphic Arts, Fogra, Forschungsgesellschaft Druck e.V.,
- Fogra Graphic Technology Research Association, GATF,
- Graphic Arts Technical Foundation /GAIN,
- PIRA, Printing Industry Research Association, The Society for Imaging Science &Technology ,
- EDEN , The European Distance and E-Learning Network, EADTU,
- European Association of Distance Teaching,
- Design Society,
- Balkan Print Forum,
- IC, International Circle of Educational institutes for Graphic Arts, Technology and Management,
- IFCA, International Federation of Communication Asociations.

In cooperation with EDEN (European Distance Education Network) and CCA (Croatian Communication Association), a second working meeting was held and tentative plan of further cooperation was set up. At the working meeting within the framework of EADTU (European Association of Distance Teaching Universities) further exchange of scientific and expert information was agreed on and some basic guidelines for future scientific cooperation were set.

In 2001, within the international project COST FP 1003, the Faculty of Graphic Arts hosted the *Training school*

for 20 PhD students from seven countries. The lecturers were experts from five European countries.
Teaching staff at the doctoral study course participate in the Balkan Print Forum, an association where Eastern European businessmen and higher-education institutions cooperate. In the association, we participate actively in creating an international network of related high-education institutions in the region, which has resulted in organisation of international conference InPEQ. The journal Acta Graphica has become a media partner for Balkan Print Forum. Within the framework of cooperation, one-month scholarships for education in Chemnitz for research assistants have been agreed – Print Promotion, whereas the students have free access to e-learning contents.
Membership in the association International Circle of Educational institutes for Graphic Arts, Technology and Management, combining in education and science departments of graphic technology and design of prominent European universities, ensures that we are up to date with the development of study programmes and educational processes of similar institutions.
The Faculty of Graphic Arts published scientific journal Acta Graphica Journal for Printing Science and Graphic Communications, ISSN 0353-4707 (http://www.actagraphica.hr). The journal is indexed in international multidisciplinary bibliographic bases of secondary publications with intentions and envisaged measures for improvement of the status. The journal is published four times a year in English in both printed and digital format and many international researchers and PhD students publish their papers in this journal.
The journal offers latest information in scientific and technological achievements in the area of graphic technology and graphic communications; its aim is integration of science, technology, industrial application and graphic communication, thus opening possibilities of cooperation between the authors in European projects. The journal has a key role in following trends in the development of the area of graphic communications, technology and design. The editorial board includes 14 scientists from six countries: Croatia, Great Britain, Bulgaria, USA, Serbia and India, among which are the teaching staff of the doctoral study course.

2.5 Comparison of the doctoral programme with similar doctoral programmes in high-ranking international universities

- Univerza u Ljubljani Naravoslovnotehniška fakulteta – doctoral study programme lasts 6 semesters where students take compulsory and optional courses and gain ECTS points by taking exams and doing research; the programme includes theory and methodological concepts in graphic technology and interactive communications.
- Moscow State University of Printing Arts – research in graphic technology, process automatisation. The Faculty of Graphic Arts doctoral study has a unique programme, namely, after the first semester (which is shared), PhD students may choose programme type graphic engineering, or graphic product modeling, whereas Moscow State University of Printing Arts, as well as the corresponding doctoral studies are specialised.
- Univerzitet u Novom Sadu fakultet tehničkih nauka – doctoral study in graphic technology; points are gained by means of attending classes and doing research
- Media technology, Linkoping University, Sweden – **PhD students gain ECTS points: classes (compulsory and optional courses 60 ECTS), authentic** scientific paper (180 ECTS), which implies at least one oral presentation with the PhD thesis topic during a TGSL science symposium, as well as attending international seminars organised by Media and Information Technology. This means that this institution has more scientific research in the total share of classes, which is a result of a developed paper industry.

2.6 Describe programme admission requirements

Study admission criteria are defined by Bylaws on postgraduate university study in graphic engineering and graphic designat the Faculty of Graphic Arts University of Zagreb. Admission to the doctoral study is done by a public invitation for applications announced by the Faculty council at the beginning of the academic year. Invitation for application is published in daily press, at least a month before start of classes.
The public invitation includes data on admission requirements, places available, documents necessary, admission deadlines and candidate eligibility criteria.
Admission criteria

- Applications are open to candidates who have graduated in university undergraduate or graduate study in the scientific discipline of technical, natural and social sciences, with the minimum grade point average of 3,5 or with recommendation by two university professors, and with 300 ECTS points,

namely, with a corresponding amount of ECTS points pursuant to the Scientific activity and higher education act.

- A candidate who has earned a diploma of a university undergraduate study of another faculty in the area of technical, natural or social sciences, and who had previously graduate in university undergraduate study of the Faculty of Graphic Arts, must take exams (the difference) in the undergraduate and graduate study (two courses, subject to agreement with the supervisor) at the Faculty of Graphic Arts that are necessary for continuation of studies.
- A candidate who has completed a university undergraduate study at another faculty in the area of technical, natural or social sciences, and who has completed the graduate study at the Faculty of Graphic Arts, is not obliged to take undergraduate study exams (the difference).
- A candidate who earned his/her Master's degree at the Faculty of Graphic Arts, may enrol to the study pursuant to par.3 of the decision by Faculty council of 17 November 2009 (CLASS. NO.: 643-03/09-19, REG.NO.: 251-80-09-19).
- A candidate who earned his/her Master's degree at another faculty in the area of technical, natural or social sciences, and who had not previously completed university undergraduate study at the Faculty of Graphic Arts, can be admitted to the study course provided that he/she takes courses (the difference) of undergraduate and graduate study (two courses, subject to agreement with the supervisor) at the Faculty of Graphic Arts that are necessary for continuation of studies.
- A candidate who has earned a Master's degree at another faculty in the area of technical, natural or social sciences, and who had previously completed university graduate study at the Faculty of Graphic Arts, can be admitted to the study course, provided that he/she takes three courses of the postgraduate doctoral study, subject to supervisor's recommendation.

All other specific cases, not included above, are dealt with by the Committee pursuant to the Scientific activity and higher education act (National Gazette no. 123/03, 105/04, 174/04, 2/07 – Decision USRH and 46/07), Bylaws on doctoral studies at the University of Zagreb (adopted by the University of Zagreb Senate on 20 April 2010), Constitution of the University of Zagreb (of 25 February 2005) and Constitution of the Faculty of Graphic Arts University of Zagreb (26 June 2005), and with approval by the Faculty council.
A candidate is obliged to apply to the invitation for applications to the doctoral study within the deadline specified in the invitation, as well as to enclose all the required documents, specified in the invitation. In the application, the applicant states whether he/she will study full-time or part-time, and who will cover the tuition expenses. Full-time study refers to doctoral students who dedicate their full time to meeting obligations set by the doctoral study programme. A part-time PhD student must enclose a statement that the working hours available to him/her ensures the completion of student obligations following the study plan. In the application, the applicant must indicate the programme type he/she wishes to be admitted to. Intervju with the applicant is a compulsory element of the admission procedure. Upon admission, all the mandatory requirements for timely completion of studies are clearly defined. Names of the applicants, their qualifications, and, if necessary, names of references are announced on the website of the Faculty. Applicant whose application has not been accepted can, within 15 (fifteen) days from the announcement, file a complaint to the Faculty council via the Committee for doctoral study. Faculty council decision is final.

2.7 Description of institutional delivery of study

Study provider is University of Zagreb Faculty of Graphic Arts.
Delivery of the doctoral study is defined by Bylaws on the doctoral study in graphic engineering and graphic designat the University of Zagreb Faculty of Graphic Arts (of 18 October 2010).
Competent authorities of the study are Faculty council and Dean of Faculty, whereas the Committee of the doctoral studies is responsible for the delivery of the study. The Committee of the doctoral study (hereinafter: the Committee) is a working body of the Faculty whose members are appointed and confirmed by the Faculty council. The Committee consists of teaching staff representatives who deliver classes at the doctoral study. It may have at least 3 (three), or at most 5 (five) members, and one of them is the chairman of the Committee. The chairman and other members of the Committee are elected to a term of office of 3 (three years)

Administrative activities at the doctoral study are delivered by the coordinator of student services.
The Committee chairman coordinates duties and responsibilities of the teaching staff, he/she proposes the teaching schedule, and also does other activities related to study organisation and implementation. The Committee meeting is held at least once a month, and, if necessary, more. Monthly tasks of the Committee include preparation of materials for Faculty council meetings based on delivered documents at least three

weeks before the meeting, as well as dealing with the requests by students of the doctoral study. Documents that are delivered and prepared pursuant to the Bylaws, are proposed to the dean for agenda of the following meeting of the Faculty council.
The Faculty council decisions are prepared by the Faculty's registrar.
Before start of academic year, the Committee analyses the teaching curriculum and potential course providers (possibility of retirement) and proposes the appointment of new providers within the framework of granted permission.
Furthermore, the Committee prepares announcement and implementation of invitation for applications for student admission to the doctoral study for the following academic year.
In reference to administrative-technical activities related to the study, the Committee collaborates with structural units of the Faculty (Student services and Financial-accounting service).
Faculty council is a competent body of the Faculty appointed by the Committee for assessment of the topic and proposal of the doctoral thesis supervisor, the Committee for doctoral thesis assessment and the Committee for doctoral thesis defence. Based on the proposals, the Committee approves dissertation topics, reviews and adopts reports by competent Committees, accredits teaching at the study, and, if necessary, appoints other bodies, and it also reaches decisions related to study programme organisation and implementation.

3. Teaching and research related requirement of delivery of the doctoral study programme

3.1 List of teaching staff at the doctoral study programme *(if necessary, add rows)*

Name	Degree/position	Affiliation
Darko Babić	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Vinko Barić	PhD / full professor	University of Zagreb Faculty of Economics and Business
Stanislav Bolanča	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Miroslav Gojo	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Jasenka Jelenčić	PhD / full professor	University of Zagreb Faculty of Chemical Engineering and Technology
Antun Koren	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Nikola Mrvac	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Diana Milčić	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Vedran Mudronja	PhD / full professor	University of Zagreb of Mechanical Engineering and Naval Architecture
Đurđica Osterman Parac	PhD / full professor	University of Zagreb Faculty of Textile Technology
Mario Plenković	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Vilko Žiljak	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Karolj Skala	PhD / research fellow	Ruđer Bošković Institute
Željka Barbarić Mikočević	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Sanja Bjelovučić Kopilović	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Maja Brozović	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Vesna Džimbeg Malčić	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Marica Ivanković	PhD / associate professor	University of Zagreb Faculty of Chemical Engineering and Technology
Nina Knešaurek	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Branka Lozo	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Sanja Mahović Poljaček	PhD / associate	University of Zagreb Faculty of Graphic Arts

	professor	
Lidija Mandić	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Klementina Možina	PhD / associate professor	University of Ljubljana Faculty of Natural Sciences and Engineering
Tadeja Muck	PhD / associate professor	University of Ljubljana Faculty of Natural Sciences and Engineering
Klaudio Pap	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Jesenka Pibernik	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Mirela Rožić	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Dubravko Banić	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Ivana Bolanča Mirković	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Aleš Hladnik	PhD / assistant professor	University of Ljubljana Faculty of Natural Sciences and Engineering
Damir Modrić	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Maja Strgar Kurečić	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Igor Zjakić	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Ivana Žiljak Stanimirović	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts

*Note: to prepare and, upon request by the Committee, to deliver detailed information for each member of teaching staff following the **Table 1** at the bottom of the form*

3.2 List of potential supervisors *(if necessary, add rows)*

Name	Degree/position	Affiliation
Darko Babić	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Vinko Barić	PhD / full professor	University of Zagreb Faculty of Economics and Business
Stanislav Bolanča	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Miroslav Gojo	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Jasenka Jelenčić	PhD / full professor	University of Zagreb Faculty of Chemical Engineering and Technology
Antun Koren	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Nikola Mrvac	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Diana Milčić	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Vedran Mudronja	PhD / full professor	University of Zagreb of Mechanical Engineering and Naval Architecture
Đurđica Osterman Parac	PhD / full professor	University of Zagreb Faculty of Textile Technology
Mario Plenković	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Vilko Žiljak	PhD / full professor	University of Zagreb Faculty of Graphic Arts
Karolj Skala	PhD / research fellow	Ruđer Bošković Institute
Željka Barbarić Mikočević	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Sanja Bjelovučić Kopilović	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Maja Brozović	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Vesna Džimbeg Malčić	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Marica Ivanković	PhD / associate professor	University of Zagreb Faculty of Chemical Engineering and Technology
Nina Knešaurek	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Branka Lozo	PhD / associate professor	University of Zagreb Faculty of Graphic Arts

Sanja Mahović Poljaček	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Lidija Mandić	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Klementina Možina	PhD / associate professor	University of Ljubljana Faculty of Natural Sciences and Engineering
Tadeja Muck	PhD / associate professor	University of Ljubljana Faculty of Natural Sciences and Engineering
Klaudio Pap	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Jesenka Pibernik	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Mirela Rožić	PhD / associate professor	University of Zagreb Faculty of Graphic Arts
Dubravko Banić	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Ivana Bolanča Mirković	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Aleš Hladnik	PhD / assistant professor	University of Ljubljana Faculty of Natural Sciences and Engineering
Damir Modrić	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Maja Strgar Kurečić	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Igor Zjakić	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts
Ivana Žiljak Stanimirović	PhD / assistant professor	University of Zagreb Faculty of Graphic Arts

*Note: if the potential supervisor is not a lecturer at the doctoral study course, detailed information for each potential supervisor must be prepared and delivered upon request of the Committee, following **Table 2** at the bottom of the form*

3.3 List of scientific, arts and development projects the doctoral study course is based on

MZOS projects (Ministry of science, education and sports)

- Standardisation of ecologically acceptable processes of graphic communications (128-1281955-1951) project leader: Diana Milčić
- Study of technological factors of graphic design for systematic improvement of quality (128-1281955-1962) project leader: Stanislav Bolanča
- New material formulations, print characteristics and environmental factors (128-1281955-1953) project leader: Ivana Bolanča Mirković
- Evaluation of quantum and quality criteria of graphic reproduction process (128-1281955-1960) project leader: Nikola Mrvac
- Graphics of a documents and securities (128-1281957-1961) project leader: Vilko Žiljak
- Improving workflows in graphic reproduction processes (128-1281957-1956), project leader: Klaudio Pap
- Digitalization of museum painting heritage (128-1281957-1958) project leader: Lidija Mandić
- Measurement methods development of printing form surfaces (128-1201785-2228), project leader: Miroslav Gojo
- Innovative graphic materials (128-0000000-3288), project leader: Branka Lozo
- Croatian media communication in convergent environment (128-0000000-3620) project leader: Mario Plenković

Bilateral projects:

- Treatments of Fibre-based Materials for Improved Food Packaging (partner at UNIZG: Branka Lozo)
- New graphic applications with chromogenic printing inks (UNIZG partner: Doc. dr. sc. Branka Lozo)
- Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing (partner at UNIZG: Dr. sc. Miroslav Gojo, full professor)
- Deinking mechanism, new formulation of the graphic materials and waste water (partner at UNIZG partner: Bolanča, Zdenka)
- Society and Technology-Media and Communication (partner at UNIZG: Plenković Mario)
- Communication and Education / structure and development of new educational models in high-education institutions (partner at UNIZG: Mario Plenković)

Multilateral projects:

- Improvements in the understanding and use of de-inking technology (partner at UNIZG: Lozo, Branka) -COST
- Characterisation of Paper Surfaces for improved Printing Paper Grades (partner at UNIZG: Lozo, Branka) – COST
- The Limits of Paper Recycling (partner at UNIZG: Lozo, Branka) – COST
- Intercultural aspects in incoming tourism of new EU member states and their implementation in educational curricula (partner at UNIZG: Plenković Mario)
- Impact of renewable materials in packaging for sustainability - development of renewable fibre and bio-based materials for new packaging applications (UNIZG partner: Branka Lozo) -COST
- New possibilities for print media and packaging (UNIZG partner: Branka Lozo) –COST
- ICT Competence Network for Innovative Sevices for Persons with complex Communication Needs (IPA2007/HR/16IPO/001-040505) – FER (GF team leader Lidija Mandić)

4. Doctoral study plan and programme

4.1 Description of doctoral study programme structure

The Faculty of Graphic Arts implements the doctoral study programme Graphic engineering and Graphic product modeling, scientific discipline technical sciences, scientific field graphic technology, branch graphic reproduction processes in accordance with the Bylaws on doctoral studies at the University of Zagreb and Bylaws on doctoral study (of 18 October 2010). The doctoral study is implemented in two programme types: graphic engineering and graphic product modeling. Upon admission to the doctoral programme, the candidates choose the mode of study, either full-time or part-time.
The classes take 3 (three) years, that is 6 (six) semesters to complete.
The first semester, shared at both programme types, includes courses based on exploration of basic disciplines essential to a scientific approach to graphic technology. The students may choose courses that have contents related to graphic materials, computer preparation, printing systems, packaging, bookbinding, multimedia and graphic communications, environmental problems of modern society and graphic technologies, as well as those referring to relations between society, science and graphic reproduction.
Programme type „Graphic engineering“, during the second semester, is based on the connection between graphic technology, graphic communication and graphic product modeling. In courses at the programme type, graphic media and their graphic structure are elaborated, as well as theory and methodology of design, problems of industrial design, and the function of design as a medium of communication. Digital space modeling and user interface are given particular attention.
A student admitted to the doctoral programme must have completed university level undergraduate or graduate study with the minimum of 3,5 point grade average or with references by two university teachers, as well as with 300 ECTS points, namely, with an equivalent amount of ECTS points.
A candidate with a diploma from another faculty or a diploma of graduate study or a Master's degree in other areas must pass exams (the difference) in courses of the graduate study at the Faculty of Graphic Arts so that he/she can follow the study.
To obtain a PhD degree, the students must obtain at least 180 ECTS points during the study course. At least 40 ECTS points of these are acquired by means of attending lectures, seminars and practices, and 140 ECTS points are acquired by means of original scientific research and other activities (pursuant to Art. 27 of the Bylaws).

4.2 Description of PhD student training mode for acquiring scientific and arts knowledge, experience and skills that will provide creative and research-based problem solving of social and economic nature

Before his/her doctoral thesis defence, the PhD student is required to have a published or accepted for publication at least 1 (one) scientific paper in a journal indexed in databases Science Citation Index (SCI) or Current Contents (CC), thematically related to his PhD research (where the PhD student is the only or one of the main authors). PhD students are sent for additional training, and in case the measurements must be conducted in international institutions, they also have a secured funding.

4.3 Description of programme opportunities for training PhD students for independent, research-based and

interdisciplinary approach to problems, for independent research and for critical assessment of the work by others

Since 2010, PhD students are being trained for independent work pursuant to article 14 of Bylaws on doctoral study programme Graphic Engineering and graphic designat the Faculty of Graphic Arts University of Zagreb. The doctoral study is structured as to encourage independent research and it is aimed at strengthening scientific and research competencies of PhD students. PhD students who graduated in graduate study of graphic technology at the Faculty of Graphic Arts are already familiar with basic scientific research methods and equipment available for measurements. Their know-hows and competencies are additionally expanded and deepened by doing supervised research and by writing research papers. Independence in research is encouraged, as well as a competitive spirit. Under the Bylaws on rewards of the Faculty of Graphic Arts, the dean grants the annual dean award for extraordinary achievements in scientific-research related and arts work.

4.4 Description of programme opportunities for acquiring work related competencies, including the list of courses for developing generic and transferable skills

Acquisition of work related competencies, generic and transferable skills is carried out through lectures, and partly through research related activities. Courses for improving generic and transferable skills at the doctoral study:

1. Presentation of information, education provider prof. Mrvac, PhD
2. Quality management, education provider prof. Mudronja, PhD
3. Qualitative methodology of graphic science, education provider prof. Plenković, PhD
4. Human resource management, education provider prof. Barić, PhD

PhD students also attend the University of Zagreb workshops where they acquire skills and competencies necessary for writing research papers and research projects.

4.5 Study opportunities for collaboration with other colleges, research institutes and private and public business sectors

Collaboration with other colleges and research institutes at the doctoral study has been set up from the very start of the study and has been continually maintained and improved.
Collaboration is carried out with the following institutions.

- Inštitutom za celulozo in papir u Ljubljani – paper recycling
- Naravoslovno tehničkom Univerzom u Ljubljani – deinking and new formulations of graphic materials
- Sovak University of Technology in Bratislava – durability of prints in environmental conditions
- Fakultetom za kemijo in kemijsko tehnologijo Univerze v Mariboru – electrochemical testings and corrosion resistance of aluminium and its oxides and changes in printing form for planographic printing
- Kemijškim inštitutom iz Ljubljane – thermochromic colors
- Kenniscentrum Papier en Karton iz Nizozemske – materials and techniques of 3D inkjet printing
- TU Dresden – selection of toxic residues – mineral oils
- Institute for Public Health „Dr. Andrija Štampar“
- Faculty of Textile Technology – application of ecological materials for slowing down combustion
- Ruđer Bošković Institute, Zagreb – surface characteristics of materials
- University of Zagreb, Faculty of Chemical Engineering and Technology – polymers, corrosion
- University of Zagreb, Faculty of Food Technology and Biotechnology – material testings
- University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture – testings of material surface characteristics
- University of Zagreb, Faculty of Electrical Engineering and Computing – image processing, user interface design

4.6 Requirements for entry to higher year of study

To be admitted to a higher year of study, the PhD student is required to obtain at least 35 ECTS points in two consecutive years pursuant to art. 8 and 27 of Bylaws on postgraduate university study Graphic engineering and Graphic designat the Faculty of Graphic Arts University of Zagreb (2008). PhD students should cover tuition fees for the following academic year in full or in instalments.

4.7 Requirements for acceptance of doctoral thesis topic

To initiate the process of applying the doctoral dissertation topic, the PhD student must obtain at least 35 ECTS points (pursuant to art. 27 of Bylaws of the postgraduate university study Graphic engineering and Graphic designat the Faculty of Graphic Arts University of Zagreb, 2008). PhD student's supervisor shall recommend to the Faculty's council the initiation of the application process of the doctoral dissertation topic (form DR-SC.-01) and appointment of Committee members for acceptance/assessment of doctoral thesis topic (form PDS-01). The thesis topic defence shall be 7 days after, at the earliest, or three months after, at the latest, the meeting of the Faculty council where the appointment of the Committee was made. After defence of the thesis topic, the Committee shall submit a report on assessment of doctoral thesis topic (form DR.SC-02). The supervisor shall propose to the Faculty council the acceptance of the thesis topic and approval of drafting of doctoral thesis. After the decision by Faculty council on acceptance of thesis topic and approval of writing the doctoral thesis, the coordinator of student service shall deliver the decision on approval of doctoral thesis topic (DR.SC.-03) to the dean of the Faculty.
The decision of Faculty council on acceptance of the doctoral thesis topic (with enclosed forms DR.SC.-01, DR.SC-02, DR.SC-03) are delivered to the Council of the technical area for topic approval for the purposes of obtaining a PhD degree.

4.8 Requirements for completion of studies

The finalisation of study starts by initiating the procedure of doctoral thesis assessment. PhD students submits his doctoral thesis, together with written consent and supervisor opinion on conducted research and achieved original scientific contribution, to the registration record of the Faculty when at least 180 ECTS points are acquired and the tuition fee is paid in full. Before submitting the paper to assessment procedure, it must be ascertained whether the PhD student met all the requirements by the study programme (all 1. and 2. semester course exams passed, all semesters of scientific research enrolled to, and other obligations).
The Faculty council appoints the Committee for doctoral thesis assessment. This Committee must within 2 (two) months of the appointment submit a written report with the grade of the doctoral thesis. PhD student may enter the doctoral thesis defence after the Faculty council accepts a positive grade of the Committee for doctoral thesis assessment, and within 2 (two) months at the latest. A record in Croatian language is drafted on the procedure of thesis defence, and in the case of defence in English language, a record is drafted in that language as well, in which case the PhD student covers by himself/herself the fees of a certified interpreter.
After having successfully defended the doctoral thesis, the PhD student encloses to the doctoral thesis a paper enlisting the members of the Committee for doctoral thesis assessment, of the Committee for doctoral thesis defence, date of defence, place of defence, and the grade by the Committee for the doctoral thesis defence. PhD student delivers to the Student services 3 (three) binded copies of the thesis and a digital record of the doctoral thesis on CD, copied 3 (three) times. The digital record must be equivalent to the paper copy of the doctoral thesis. PhD student delivers to the Committee for the doctoral thesis defence as much as binded doctoral thesis copies as there are members of the Committee of the doctoral thesis defence.
PhD student must deliver his/her doctoral thesis and the digital record of the doctoral thesis within 15 (fifteen) days after doctoral thesis defence so that the thesis can be published in time on the website of the Faculty of Graphic Arts University of Zagreb pursuant to art. 29 of the Bylaws.

4.9 Course list *(if necessary, add rows)*

Name	Course
Assistant Professor Maja Strgar Kurečić , PhD	Color management in digital printing
Associated Professor Željka Barbarić Mikočević, PhD Associated Professor Mirela Rožić, PhD	Chemical analysis of graphical tehnology materials
Full Professor Vinko Barić, PhD	Human resource management
Assistant Professor Ivana Bolanča Mirković, PhD	Nanotechnology and the environment
Full Professor Stanislav Bolanča, PhD	Raster elements in press
Associated Professor Vesna Džimbeg Malčić, PhD	Interaction of electromagnetic radiation with printing surfaces

Assistant Professor Aleš Hladnik, PhD	Modern statistical methods in natural science and technics
Associated Professor Sanja Mahović Poljaček, PhD	Advanced recording processes on printing forms
Full Professor Nikola Mrvac, PhD	Information presentation
Full Professor Vedran Mudronja, PhD	Quality management
Full Professor Mario Plenković, PhD	Qualitative methodology in graphic science
Karolj Skala, PhD	Multimedia systems
Full Professor Vilko Žiljak, PhD	Computer typography
Associated Professor Lidija Mandić, PhD	Picture display models in different media
Full Professor Darko Babić, PhD	Packaging tasks
Full Professor Darko Babić, PhD	Bookbinding through time
Assistant Professor Dubravko Banić, PhD	Parameter optimisation of graphich machinery design parametara konstrukcije grafičkih strojeva
Associated Professor Vesna Džimbeg Malčić, PhD Assistant Professor Damir Modrić, PhD	Physical principles of non-destructive measurement methods in graphic reproduction
Full Professor Miroslav Gojo, PhD	Selected chapters in corrosion and protection of materials
Full Professor Miroslav Gojo, PhD Associated Professor Sanja Mahović Poljaček, PhD	Printing from moistening
Associated Professor Marica Ivanković, PhD	Physical and chemical properties of polymeric materials
Full Professor Jasenka Jelenčić, PhD	Polymerisation processes
Full Professor Antun Koren, PhD	Information security in print
Associated Professor Branka Lozo, PhD	Non-destructive measurement methods in graphic technology
Associated Professor Tadeja Muck, PhD	Research methods of printing material interaction
Associated Professor Klaudio Pap, PhD	Digital normisation of graphic preparation
Associated Professor Klaudio Pap, PhD	Graphic web technologies
Full Professor Đurđica Osterman Parac, PhD	Physical and chemical properties of dyeing agents
Karolj Skala, PhD	Multimedia web technologies
Assistant Professor Igor Zjakić, PhD	Advanced printing systems
Full Professor Vilko Žiljak, PhD	Computer imaging
Assistant Professor Dubravko Banić, PhD	Visualization in graphic manufacture modeling
Associated Professor Sanja Bjelovučić Kopilović, PhD	Virtual people
Associated Professor Maja Brozović, PhD	Methodology of presenting graphic solutions
Associated Professor Maja Brozović, PhD	Graphic structures
Associated Professor Nina Knešaurek, PhD	Colorimetric methods in graphic reproduction
Full Professor Diana Milčić, PhD	Design theory
Full Professor Diana Milčić, PhD	User interface design
Associated Professor Klementina	Typography theory

Možina, PhD	
Associated Professor Jesenka Pibernik, PhD	Digital space design
Full Professor Mario Plenković, PhD	Communication science of graphic communications
Full professor Mario Plenković, PhD	Graphic design of media campaigns
Assistant professor Ivana Žiljak Stanimirović, PhD	Safety graphic design

*Note: It is necessary to prepare for each course, and upon request by the Committee, to deliver detailed information following the **Table 3** at the bottom of the form*

4.10 Possibility of the doctoral study programme in English language

Classes for all courses at the doctoral study programme can be delivered in English language.

4.11 List of courses/modules that can be delivered in English language

All courses may be delivered in English language.

4.12 Admission criteria and requirements of UPIS courses/modules of other doctoral studies

Subject to agreement with his supervisor, the PhD student may enrol in courses of other doctoral studies if related to the area of research. An amount of ECTS points is approved for courses enrolled in other studies, in accordance with point-related scheme of the doctoral study admitted to.

4.13 Full-time study and part-time study (structure)

Under Bylaws on doctoral studies, duration of study is defined as either full-time or part-time.
Full-time students are employed by the University or they are unemployed, and they are obliged to complete the study within 3 years of the admission date. On reasonable grounds, decided about by the Committee, the study may be extended to 5 years.
PhD students employed in economy, and who would like to advance their careers and apply their knowledge in practice, are admitted to the study part-time, and they are obliged to complete the study within 5 years. On reasonable grounds, decided about by the Committee, the study may be extended to 7 years.
Upon expiry of the mentioned deadline from the admission, the PhD student loses its right to doctoral thesis defence.
Full-time student must pass the exams within 1 (one) year from the day of realizing the rights of taking the exams. Part-time student must pass the exams within 2 (two) years from the day of realizing the rights of taking exams. On reasonable grounds, these deadlines may be extended exceptionally by the Committee to 6 months maximum.

4.14 Study expenses per PhD student

Tuition fees are defined by Decision of Faculty council and are harmonised with the tuition fees of similar doctoral studies of the technical area. Study expenses per PhD student amount to 10 000 HRK per semester, namely, 60 000 HRK in total for 6 semesters.
Full-time students, who have been appointed to the position of research assistant, and who are employed by the Faculty, have their tuition fees covered by the Faculty. Tuition fees of the doctoral study are used to cover the teaching expenses, topic application expenses, doctoral thesis assessment and defence expenses as well as the expenses of the experimental part of the study. The expenses of the experimental part of the study are format in agreement with the supervisor, and these are approved by the board.

5. Accordance with the Bylaws on doctoral studies at the University of Zagreb

Section	YES	NO
Are doctoral study classes and research pursuant to art. 5?	x	
Are admission requirements and study course duration pursuant to art. 6?	x	
Are supervision and duties of the supervisor structured pursuant to art. 9 and 10?	x	

Does the supervisor submit once a year a report on activities of the PhD student to the Council of doctoral studies, on the University form, pursuant to art. 10?	X	
Note: the report is submitted only for research assistants, to be implemented by entry into force of the 2010 Bylaws of doctoral study		
Are PhD students' rights and duties structured pursuant to art. 11?	x	
Does the PhD student submit once a year to the Council of the doctoral study report on his/her activities (potentially, with presentation of research), on the University form, pursuant to art. 11?	x	
Note: to be implemented by entry into force of the 2010 Bylaws of doctoral study		
Is PhD thesis defined pursuant to art. 13, 14 and 15?	x	
Is the process of application, assessment and approval of doctoral research (project) topic implemented pursuant to art. 16?	x	
Is the process of doctoral thesis assessment implemented pursuant to art. 17 and 19?	x	
Is the process of doctoral thesis defence implemented pursuant to art. 18 and 19?	x	
Does the Council of doctoral study take detailed record on research and other published study requirements of each PhD student, including the plan of duties (elaboration of PhD portfolio), pursuant to requirements of securing quality under art. 22? *Note: to be implemented by entry into force of the 2010 Bylaws of doctoral study.*	x	
Does the Council of doctoral study take record on weight and efficacy of supervisors and for each supervisor it takes record on the number of PhD students admitted and the number of PhD students who defended their doctoral thesis, pursuant to requirements of securing quality under art. 22?	x	
Does the council of doctoral study perform each year selfassessment based on annual reports by supervisors and PhD students, of which a report of activities is submitted to the expert council of the section and to the University on the University form, pursuant to requirements of securing quality under art. 22?	x	

PLACE, DATE

Place and date:

Person authorised:

Supplements:

Table 1. Detailed list of teaching staff
Add a table for every member of teaching staff

Table 1. Detailed list of teaching staff	
Name	***Maja Strgar Kurečić***
Short CV	Maja Strgar Kurečić, PhD is an asistant professor at the Faculty of Graphic Arts, Department of Reproduction photography, where she lectures in several graduate and postgraduate courses (Reproduction photography 2, The change of reproduction photography in modern media, Reproduction of visual information) . She was assigned to 3 research projects supported by the Ministry of science and to one European – technological project as well. Currently, she has been working on a research project ''Digitalization of museum painting heritage''. The research area refers to graphic technology, digital photography and graphic design. Current research is focused on the development of a system of color management in graphic reproduction process, as well as on accurate characterisation of digital photography system. In addition, she has been studying methods for dynamic range increase in photography. She is a member of organizational committees of several international and national symposiums. She is a member of Commission CIE - Division 8, TC8-09 (International Commission on Illumination). Apart from her scientific work, artistic photography is one of her main interests. She has exhibited her work in 10 solo and 25 group exhibitions both nationally and internationally. She has won many awards and is a member of ULUPUH (Croatian Association of Artists of Applied Arts).
Date of last academic appointment to the teaching and research position	Appointed assistant professor in technical sciences on 6 September 2010, field: technical sciences
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	Strgar Kurečić, Maja; Agić, Darko; Mandić, Lidija. Developing a custom color target for artwork imaging. // Imaging science journal. 59 (2011), 6; 317-331 Strgar Kurečić, Maja; Agić, Darko; Mandić Lidija. Assessing the color image differences depending on the reproduction device // DAAAM International Scientific Book 2010 / Katalinic, Branko (ur.) Vienna, Austria, 2010. Str. 73-80. Agić, Darko; Strgar Kurečić, Maja; Mandić, Lidija; Pap, Klaudio. Black separation strategies in color reproduction. // DAAAM International Scientific Book 2009/ Katalinic, Branko (ur.) Vienna, Austria, 2009. Str. 001-008 Strgar Kurečić, Maja; Agić, Darko; Mandić, Lidija. The effect of input device profile on color image reproduction // DAAAM International Scientific Book 2008/ Katalinić, Branko (ur.). Vienna, Austria, 2008. Str. 863-872. Strgar Kurečić, Maja; Agić, Darko; Mandić, Lidija. Digitalni fotografski sustav za vjernu reprodukciju boja različitih materijala. // Tekstil : Časopis za tekstilnu tehnologiju i konfekciju. 57 (2008); 623-631

	Agić, Darko; Gojo, Miroslav; Strgar Kurečić, Maja. Determination of equivalent-density domain in black compensation implementation for the selected profile. // Tehnički vjesnik. 18 (2011), 1; 63-68 Poljičak, Ante; Mandić, Lidija; Strgar Kurečić, Maja. The Influence of Image Enhancement Filters on a Watermark Detection Rate. // Acta graphica. 22 (2011), 3-4; 53-60 Poljičak, Ante; Agić, Darko; Mandić, Lidija; Strgar Kurečić, Maja. Suitability of the RGB Channels for a Pixel Manipulation in Spatial Domain Data Hiding Techniques. // Acta graphica. 21 (2010), 1-2; 1-5 Poljičak, Ante; Mandić, Lidija; Strgar Kurečić, Maja. Improvement of the Watermark Detector Perfomance Using Image Enhancement Filters // PROCEEDINGS IWSSIP 2012 / Rupp, Markus ; Wistawel, Bernhard (ur.). Beč, 2012. 74-77 Mandić, Lidija; Strgar Kurečić, Maja; Poljičak, Ante; Agić, Darko. Changes in Perception of Colorimetric Differences Caused by Different Backgrounds // Proceedings of the 53rd International Symposium ELMAR-2011 / Božek, Jelena ; Grgić, Mislav (ur.). Zagreb : Croatian Society Electronics in Marine, 2011. 123-126 Strgar Kurečić, Maja; Agić, Darko; Mandić, Lidija; Poljičak, Ante. Misconceptions about HDR photography// Interaction of Colour & Light in the Arts and Sciences - Conference Proceedings / Schindler, Verena ; Cuber, Stephan (ur.). Zurich : pro/colore, 2011. 755-758
List of science and art project assigned to in the last 5 year and which are relevant to the doctiral programme	„Digitalization of museum painting heritage“ project code: 128-1281957-1958, project leader: Associate professor Darko Agić, PhD, from January 2007, part of research program „Digital systems in typography“ 1281957. „Method development for measuring area of printing forms“ project code 128-1201785-2228, project leader: Full professor Miroslav Gojo PhD, from January 2007, part of research program „Development of a scientific measurement“, 1201785.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	

Table 1. Detailed list of teaching staff

Name	***Mirela Rožić***
Short CV	Associate professor, Mirela Božić, MSc, PhD graduated from Faculty of Chemical Engineering and Technology, University of Zagreb in 1994. Since 1994 she has been a teaching assistant at the Faculty of Graphic Arts in Zagreb, Department of Chemistry in Graphic Technology. She started her postgraduate studies at the Faculy of Chemical Engineering and Technology, University of Zagreb, Department of Chemistry in Graphic Technology and completed her Master's Degree in natural science discipline, field chemistry in 1999. She completed her doctoral thesis at the Faculty of Chemical Engineering and Technology and was awarded a PhD degree in natural science discipline, field of chemistry in 2002. She was appointed to the position of research assosiate in 2005 and to the teaching and research position of an associate professor in technical science discipline, field of graphic technology. She was a lecturer in several groups of chemistry courses in graphic technology. Furthermore, she was appointed senior research associate on 12 May 2009,

	and to research and teaching position of associate professor, as well as to the position of research fellow on 17 June 2011.
Date of last academic appointment to the teaching and research position	17 June 2011
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. Y. Bennani, K. Košutić, Krešimir, E. Dražević, M. Rožić, *Wastewater from Wood and Pulp Industry Treated by Combination of Coagulation, Adsorption on Modified Clinoptilolite Tuff and Membrane Processes*, Environmental technology 33, 10 (2012) , 1159-1166. 2. D. Gregor-Svetec, M. Rožić, T. Muck, B. Lozo, *Natural zeolite as a filler in the base ink jet paper sheet*, Nordic pulp & paper research journal 27, 4 (2012) , 721-728. 3. M. Rožić, S. Miljanić, *Sorption of HDTMA cations on Croatian natural mordenite tuff,* Journal of Hazardous Materials 185, 1 (2011) 423-429. 4. L. Ćurković, M. Trgo, M. Rožić, N. Vukojević Medvidović, *Kinetics and thermodynamics study of copper ions removal by natural clinoptilolite*, Indian journal of chemical technology 18 , 2 (2011) 137-143. 5. J. Hrenović, T. Ivanković, M. Rožić, *Requirement of acinetobacter junii for magnesium, calcium and potassium ions*, Journal of bioscience and bioengineering 110, 2 (2010) 180-186. 6. J. Hrenović, M. Rožić, T. Ivanković, A. Farkaš, *Biosorption of phosphate from synthetic wastewater by biosolids*, Central European Journal of Biology 4, 3 (2009) 397-403. 7. M. Rožić, Đ. Ivanec Šipušić, L. Sekovanić, S. Miljanić, L. Ćurković, J. Hrenović, *Sorption phenomena of modification of clinoptilolite tuffs by surfactant cations*, Journal of Colloid and Interface Science 331, 2 (2009) 295-301. 8. J. Hrenović, T. Ivanković, L. Sekovanić, M. Rožić, *Toxicity of dodecylpyridinium and cetylpyridinium chlorides against phosphate-accumulating bacterium,* Central European Journal of Biology 3, 2 (2008) 143-148. 9. J. Hrenović, M. Rožić, L. Sekovanić, A. Anić-Vučinić, *Interaction of surfactant-modified zeolites and phosphate accumulating bacteria,* Journal of Hazardous Materials 156, 1-3 (2008) 576-582.
List of science and art project assigned to in the last 5 year and which are relevant to the doctiral programme	2007 – 2010 *"Interrelation of mineral bearers and fosphateremoval of waste water bacteria"* project code: 119-1191155-1203, Ministry of science of the Republic of Croatia 2007 - 2012 *"Membrane and adsorption procedures of organic matter removal in water processing"* project code: 125-1253008-3009, Ministry of science of the Republic of Croatia
Number of successful supervision undertakings which resulted in completion of doctoral thesis	
Table 1. Detailed list of teaching staff	
Name	***Stanislav Bolanča***
Short CV	After having graduated from Faculty of Technology, University of Zagreb, Stanislav Bolanča started the study in Analytical chemistry at the University of Zagreb. He completed his Master's degree in 1978 primarily focusing on graphic colour analysis. He completed his doctoral dissertation on the subject of graphic imprints colorimetry at his home faculty in 1981. The paper has been categorised in the technical sciences dicipline. After having graduated from his undergraduate studies, Stanislav Bolanča got employed at the printing office, where he started his independent and innovative work career. His next workplace was a light bulb factory, where he proved to be

	an innovative professional. He was working part time at the Graphic Vocational Studies simultaneously and got appointed to teaching assistant position. Later on, the Graphic Vocational Studies were refounded as Faculty of Graphic Arts University of Zagreb. He was appointed to assistant professor position in 1985, associate professor in 1991, full professor in 1998 and a tenured professor in 2003. At the University, Stanislav Bolanča is a member of wide range of Boards and Committees, such as: Academic Standards Committee, Work Control Commission, Publications Board and Home Board. He was a member of both University Council and University Senate, as well as Board of Science and Technology. At the Croatian Academy of Technical Sciences he founded the Department of Graphic engineering, where he also held the function of its registrar. Today he is the member of the Academy. While at the University Porfessors Association, he was the President of the Court of honour. He held many important positions at the faculty and the importance of these is most appreciated: president of the first Science Unit at the Graphics Vocational Studies and Faculty, Head of the department, founder and Head of two postgraduate studies, Vicedean for teaching and science. He was the faculty Dean for three terms of office. He was a member or a chairman of many Boards as well as the syndicate registrar. As lecturer, he taught at three national universities as well as one international. His area of interest and main professional occupation is printing technology. He contributed immensely to printing technology by publishing several University textbooks, organizing several new courses and providing for several research laboratories. In current, as well as in several previous, Stanislav Bolanča is course provider and lecturer at the following courses: Main printing technologies, Small printing technologies, Digital printing, Packaging printing, two hours per week, and at the doctoral study on a course Raster elements in printing.
Date of last academic appointment to the teaching and research position	He was appointed a tenured professor in 2003.
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	Original scientific paper in CC journal: 1. Modrić, Damir; Bolanča, Stanislav; Beuc, Robert. **Monte Carlo Modeling of Light Scattering in Paper**. // *Journal of Imaging Science and Technology*. **53** (2009) , 2; 020201-1-020201-8 Scientific paper in other gournals: 1. Majnarić, Igor; Bolanča, Stanislav; Golubović, Kristijan. **Neke karakteristike transfernih folija načinjenih tehnikom mlaza tinte te njihov utjecaj na kvalitetu otisaka na pamučnoj tkanini**. // *Tekstil : časopis za tekstilnu tehnologiju i konfekciju*. **59** (2010) , 10; 456-462 (article, scientific). Scientific paper in conference proceedings with international review: 1. Bartolić, Tomislav; Majnarić, Igor; Bolanča, Stanislav. **Impact of Printing Additional Inks on Multicolor Reproduction with Liquid Electrophotography Toner** // *Conference Proceedings MATRIB 2013* / Alar, Željko ; Jakovljević, Suzana ; Šolić, Sanja (ur.). Zagreb : Croatian Society for Materials and Tribology, 2013. 29-41 2. Bolanča Mirković, Ivana; Majnarić, Igor; Bolanča, Stanislav. **RECYCLING OPTIMISATION OF THE ELECTROPHOTOGRAPHIC PRINTS** // *Proceedings of the 8th International Conference of DAAAM Baltic Industrial Engineering* / Otto, Tauno (ur.). Tallinn : Tallinn University of Technology, 2012. 119-124 3. Bolanča Mirković, Ivana; Majnarić, Igor; Bolanča, Stanislav. **ECOLOGICAL SUSTAINABILITY OF THE SHEETFED OFFSET PRINTING** // *Annals of DAAAM for 2012 & Proceedings of the 23rd International*

DAAAM Symposium, Volume 23, No.1 / Branko, Katalinić (ur.). Vienna, : DAAAM International, Vienna, Austria, 2012. 947-952

4. Bolanča Mirković, Ivana; Majnarić, Igor; Bolanča Stanislav. **Enviromental Sustainability and Graphic Production** // *Annals of DAAAM for 2011 & Proceedings* / Katalinić, Branko (ur.). Vienna, Austria : DAAAM International Vienna, 2011. 185-186
5. Majnarić, Igor; Bolanča, Stanislav; Morić, Marko; Svilićić, Blaž. **KOLORIMETRIJSKA ANALIZA UV LAKIRANE RIGIDNE VINILNE PODLOGE PRETHODNO OTISNUTE U TEHNICI OFSETNE ELEKTROFOTOGRAFIJE** // *Proccedings of MATRIB 2011* / Schauperl, Z. ; Šolić, S. (ur.). Zagreb : Croatian Society for Materials and Tribology, 2011. 256-265
6. Tahirović, Hasan; Majnarić, Igor; Bolanča Stanislav. **INFLUENCE OF THE OFFSET RUBBER BLANKETS COMPOSITION ON THE SCREEN ELEMENTS REPRODUCTION PRINTED ON DIFFERENT PAPERS** // *13th International Conference on Printing, Design and Graphic Communications Blaž Baromić* / Bolanča, Zdenka (ur.). Zagreb : University of Zagreb Faculty of Graphic Arts, University of Ljubljana Faculty of Natural Science and Engineering, Ogranak matice hrvatske Senj, Pulp and Paper Institute, Ljubljana, 2009. 155-158
7. Bauk, Stanko; Majnarić, Igor; Bolanča, Stanislav; Golubović, Kristijan. **INFLUENCE OF THE UNCOATED PRINTING SUBSTRATES ON THE QUALITY OF THE MONOCHROMATIC DIGITAL PRINTING** // *12th INTERNATIONAL CONFERENCE ON PRINTING, DESIGN AND GRAPHIC COMMUNICATIONS BLAŽ BAROMIĆ* / Bolanča, Zdenka (ur.). Zagreb : University of Zagreb Faculty of Graphic Arts, University of Ljubljana Faculty of Natural Science and Engineering, Ogranak matice hrvatske Senj, Pulp and Paper Institute, Ljubljana, 2008. 41-45
8. Bolanča, Stanislav; Golubović, Kristijan. **TEHNOLOGIJA TISKA OD GUTENBERGA DO DANAS** // *Senjski Zbornik* / Glavičić, Miroslav (ur.). Senj : Senjsko muzejsko društvo, Gradski muzej Senj, 2008. 125-146
9. Majnarić, Igor; Bolanča, Stanislav; Bolanča Mirković, Ivana. **The Influence of the Toner Structure on the Quality of Black-white Digital Printing** // *Annals of DAAAM for 2008 & Proceedings of the 19th International DAAAM Symposium "Intelligent manufacturing & Automation : Focus on Next Generation of Intelligent Systems and Solution"* / Branko, Katalinić (ur.). Vienna : DAAAM International Vienna, 2008. 779-780

Book chapters:

1. Majnarić, Igor; Golubović, Kristijan; Bolanča, Stanislav; Modrić, Damir. **VOLTAGE EFFECT ON DEVELOPING PROCESS AND B & W REPRODUCTION** // DAAAM INTERNATIONAL SCIENTIFIC BOOK 2010 / Katalinić, Branko (ur.). Vienna : DAAAM INTERNATIONAL VIENNA, 2010. Str. 509-524.
2. Majnarić, Igor; Modrić, Damir; Golubović, Kristijan; Bolanča, Stanislav. **The 4-Beam Laser Diode Array Influence on the Colour Imaging** // DAAAM International Scientific Book 2009 / Katalinić, Branko (ur.). Vienna : DAAAM International Vienna, 2009. Str. 81-96
3. Milković, Marin; Mrvac, Nikola; Bolanča, Stanislav. **Evaluation of the Chromatic Induction Intensity on Munker-White Samples** // DAAAM International Scientific Book 2008 / Katalinić, Branko (ur.). Vienna : DAAAM International, 2008. Str. 485-498

Other papers in conference proceedings with review:

1. Majnarić, Igor; Bolanča, Stanislav; Morić, Marko; Svilićić, Blaž. **KOLORIMETRIJSKA ANALIZA UV LAKIRANE RIGIDNE VINILNE PODLOGE PRETHODNO OTISNUTE U TEHNICI OFSETNE ELEKTROFOTOGRAFIJE** //

	Proccedings of MATRIB 2011 / Schauperl, Z. ; Šolić, S. (ur.). Zagreb : Croatian Society for Materials and Tribology, 2011. 256-265 Conference proceeding summaries: 1. Majnarić, Igor; Golubović, Kristijan; Bolanča, Stanislav; Modrić, Damir. **ANALIZA KOLORNE REPRODUKCIJE KREIRANE PRIMJENOM VIŠESLOJNOG NANAŠANJA BIJELE BOJE NA PVC FOLIJU** // *Abstract Book MATRIB 2010* / Zdravko, Schauperl ; Mateja, Šnajdar (ur.). Zagreb : Croatian Society for Materials and Tribology, 2010. 268-279 2. ANALYSIS OF COLUOR REPRODUCTION CREATED BY APPLYING MULTIPLE LAYERS OF WHITE INK ON PVC FOIL // *Abstract Book MATRIB 2010* / Zdravko, Schauperl ; Mateja, Šnajdar (ur.). Zagreb : Croatian Society for Materials and Tribology, 2010. 268-279 3. Majnarić, Igor; Golubović, Kristijan; Bolanča, Stanislav. **KOLORIMETRIJSKA ANALIZA ELEKTROFOTOGRAFSKIH OTISAKA OTISNUTIH NA PVC-u I POLIKARBONATU** // *Proceedings MATRIB 2009* / Grilec, Krešimir ; Marić, Gojko (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2009. 120-127 4. Majnarić, Igor; Tahirović Hasan; Zjakić Igor; Bolanča Stanislav. **The influence of the structure of the offset rubber on the screen reproduction** // *Abstracts Book MATRIB 2008* / Krešimir, Grilec ; Gojko, Marić ; Suzana, Jakovljević (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2008. 173-182
List of science and art project assigned to in the last 5 year and which are relevant to the doctiral programme	Project: Tehnological factors of a graphic design study for systematic quality improvement. Project as part of a program: Study of materials and graphic reproduction processes in a function of sustainable development.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	Nikola Mrvac, PhD, Igor Zjakić, PhD, Miroslav Mikota, PhD, Damir Modrić, PhD, Marin Miljković, PhD, Maja Brozović, PhD, Vesna Džimbeg Malčić, PhD, Igor Majnarić, PhD (8)

Table 1. Detailed list of teaching staff

Name	***Assistant professor Aleš Hladnik, PhD***
Short CV	Born on 16.7.1967, Ljubljana, Slovenia Education: - B.Sc. of Chemistry (1994, University of Ljubljana, Faculty of Chemistry and Chemical Technology) - Ph.D. of Technical Sciences (2003, Technical Uniersity Graz, Austria) Employment: - Pulp and Paper Institute Ljubljana (1995-2006) - University of Ljubljana, Faculty of Natural Sciences and Engineering, Department of Textiles (2006-): assistant professor at the Chair of Information and Graphic Arts Technology Research work: - Author or coauthor of 25 SCI articles and several tens of other contributions (articles, conference presentations) mainly from the following fields: - Research in the field of digital - especially ink-jet - printing - Implementation of modern statistical and computer supported methods in graphic arts, papermaking and textiles: artificial neural networks, multivariate tools (PCA, PLS, clustering techniques, multifactorial ANOVA) - Image processing and analysis - Color science - Investigation of interactions between a substrate (paper, board, plastic foil) and a liquid (water, printing ink, coating colour, surface sizing agent)

	- Programme committee member of the international Symposium in Graphic Arts/ Polygraphia Academica (Czech Republic / Slovakia) - Programme committee member of the international printing, design and graphical communications conference Blaž Baromić (Croatia) - Member of the Slovenian Association of Papermaking Engineers and Technicians (DITP)
Date of last academic appointment to the teaching and research position	15.12.2010
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	- KARLOVITS, Mirica, HLADNIK, Aleš, ČERNE, Lidija, GREGOR-SVETEC, Diana: Use of effect pigments for quality enhancement of offset printed specialty papers. *Color Research & Application*, 38(3), 2013, 168-176 - PAVKO-ČUDEN, Alenka, HLADNIK, Aleš, SLUGA, Franci: Loop length of plain single weft knitted structure with elastane. *Journal of Engineered Fibers and Fabrics*, 8(2), 2013, 110-120 - PAVKO-ČUDEN, Alenka, HLADNIK, Aleš, SLUGA, Franci: Impact of material, structure and relaxation process parameters of elasticized single-knitted fabrics on loop length. *Textile Research Journal*, 83(1), 2013, 56-65 - GOLEŽ, Mateja, HLADNIK, Aleš: Interpreting the age of the ruins of St. John the Baptist's church with multivariate analysis. *Journal of Cultural Heritage*, 2012 (in press) - KÖNIG, Silva, GREGOR-SVETEC, Diana, HLADNIK, Aleš, MUCK, Tadeja. Assessing the lightfastness of prints by image chrominance histogram quantification. *Journal of Imaging Science and Technology*, 56(6), 2012, 060507/1-060507/7 - ZUPIN, Živa, HLADNIK, Aleš, DIMITROVSKI, Krste: Prediction of one-layer woven fabrics air permeability using porosity parameters. *Textile Research Journal*, 82(2), 2012, 117-128 - HLADNIK, Aleš, LAZAR, Miha: Paper and board surface roughness characterization using laser profilometry and gray level cooccurrence matrix. *Nordic Pulp and Paper Research Journal*, 26(1), 2011, 99-105 - JAVORŠEK, Dejana, JAVORŠEK, Andrej, HLADNIK, Aleš: Comparison of chromatic adaptation transforms used in textile printing sample preparation. *Coloration Technology*, 126(5), 2010, 275-281 - DEBELJAK, Mirica, BRAČKO, Sabina, HLADNIK, Aleš, GREGOR-SVETEC, Diana: Comparison of ultraviolet inkjet printing on different synthetic fibrous papers. *Tappi Journal*, 9(5), 2010, 17-25 - ČRNE-HLADNIK, Helena, PEKLAJ, Cirila, KOŠMELJ, Katarina, HLADNIK, Aleš, JAVORNIK, Branka: Assessment of Slovene secondary school students' attitudes to biotechnology in terms of usefulness, moral acceptability and risk perception. *Public Understanding of Science*, 18(6), 2009, 747-758 - ILEC, Eva, SIMONČIČ, Barbara, HLADNIK, Aleš: Evaluation of surfactant detergency using statistical analysis. *Textile Research Journal*, 79(4), 2009, 318-325 - HLADNIK, Aleš, ČERNIČ, Marjeta, BUKOŠEK, Vili: Role of paper coating pigments and additives in darkfastness of ink jet prints. *Journal of Imaging Science and Technology*, 52(1), 2008, 010507/1-010507/7
List of science and art project assigned to in the last 5 year and which are relevant to the doctiral programme	- New possibilities for print media and packaging - combining print with digital (COST Action FP1104; Management Committee substitute; 22.5.2012 – 21.5.2016) - Textiles and Ecology (national research program P2—0213; 1.1.2009-31.12.2014) - Introduction of alternative crops with high content of polyunsaturated fatty acids in the crop rotation, functional use of seeds, oil and secondary products in Slovenia (national CRP project V4-1138; 1.10.2011 - 30.9.2014) - Rational use of wood in the context of sustainable forest management (national applied research project L4-7163; 1.9.2005 - 31.8.2008)
Number of successful supervision undertakings which resulted in completion of doctoral	0; 3 current Ph.D. students

Table 1. Detailed list of teaching staff	
Name	***Vesna Džimbeg-Malčić***
Short CV	Vesna Džimbeg-Malčić was born in 1956 in Zagreb, where she completed her elementary education and graduated from high school. In 1981, she graduated in Engineering physics and in 1990 she completed her Master's degree, which was a part of her postgraduate studies of natural sciences, programme type: atomic and molecural physics. She completed her doctoral thesis, which was entitled ''Application *of* Kubelka-Munk theory and Yule-Nielsen effect on print substrates'', in 2005 at the Faculty of Graphic Arts where she has been working at the Department of Physics in Graphic Technology since 1984. She was appointed to assistant professor position in 2006 and associate professor in 2011. She started her professional work in science at the University's Institute of Physics, Department of atomic and molecular physics where she conducted Spectroscopic research in Electromagnetic radiation. In 1998, she started working on interaction of controlled electromagnetic radiation with selected print substrates, and on the analysis of optical features of absorbent and non-absorbent print substrates. She has been actively participating in a science project which is a part of National Research Program of Ministry of Science and Bilateral Croatian – Slovenian Cooperation Programme in the science and technology discipline. She has been assigned to international science programme COST E32 (European COoperation in the field of Scientific and Technical Research) as well. As a result of her extensive science research, she has published around 40 science papers. 3 (three) of those were published as chapters in science books (serial publications), 5 (five) of them were published with CC or SCI indexes, and 6 (six) were published in secondary publications. She has been an active publisher and a member of international and national science symposiums. Consequently, she has published 17 (seventeen) science papers in International Symposium Records and 10 (ten) of them at National Science Syposiums. She contributed immensely to the modification of curriculum at the Faculty of Graphic Arts, organized two new courses and adjusted curriculum to current undergraduate and graduate studies.
Date of last academic appointment to the teaching and research position	She was appointed tenured professor on 18 April 2011, technical science discipline, field: graphic technology
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	Z. Barbaric-Mikocevic, I. Plazonic, **V. Dzimbeg-Malcic**, "Effects of Pulping Temperature and Accelerated Ageing on the Optical Properties of Digital Duplicator Print Handsheets", Cellulose Chemistry and Technology, 44, 10 (2010), 499-504. (CC, SCI, IF 0.292) **V. Džimbeg-Malčić**, Ž. Barbarić-Mikočević, K. Itrić, "Kubelka-Munk Theory in Describing Optical Properties of Paper (I), Tehnički vjesnik, 18, 1 (2011), 117-124. (SCI-exp. IF: 0.347) **V. Džimbeg-Malčić**, Ž. Barbarić-Mikočević, K. Itrić, "Kubelka-Munk Theory in Describing Optical Properties of Paper (II), Tehnički vjesnik, 19, 1 (2012), 191-196. (SCI-exp. IF: 0.347) Ž.Barbaric-Mikocevic, I. Plazonic, **V. Dzimbeg-Malcic**, "The deinkability improvement of offset prints made from a two-side coated substrate," BioRes. 81, (2013), 557-570. (CC, SCI, IF: 1.328) I. Plazonic, Z. Barbaric-Mikocevic, **V. Dzimbeg-Malcic**, "Office Papers Stability During Accelerated Ageing", DAAAM International Scientific Book 2009/Katalinić, Branko (ur.) Viena : DAAAM International, (2009), 333-340. (INSPEC) Ž. Barbarić-Mikočević, **V. Džimbeg-Malčić**, I. Plazonić, "Chemical deinking flotation efficiency of coloured toner" Acta graphica, 20 (2009), 1-8. (INSPEC) K. Itrić, **V. Džimbeg-Malčić**, T. Cigula, Z. Barbarić-Mikočević, "Influence of Accelerated Aging on Properties of Office Copy Paper", Progress in Paper Physics Seminar, Conference Proceedings, U. Hirn (ur.), Graz, (2011); 359-366 I. Bates, **V. Džimbeg-Malčić**, K. Itrić," Optical deterioration of samples printed with basic Pantone inks", Acta graphica, 23, 3-4 (2012), 79-90. (INSPEC)

List of science and art project assigned to in the last 5 year and which are relevant to the doctiral programme	She has been a research associate on a research project ''Innovative graphic materials" (128-0000000) since 2008 and supervised by the project leader, associate professor Branka Lozo, PhD.
Number of successful supervision undertakings which resulted in completion of doctoral	
Table 1. Detailed list of teaching staff	
Name	***Associate Professor Sanja Mahović Poljaček, MSc PhD***
Short CV	Associate Professor Sanja Mahović Poljaček, MSc PhD was born on 15 December 1974 in Zagreb. She completed her elementary education in Samobor, and graduated from Science V. Grammar School in Zagreb. In 1993 she started her studies in Graphic arts at the University of Zagreb, programme type : technical - technological graphic design and graduated in 1998. As a student she was awarded with scholarship by the Ministry of science and education based on her grade point average. From 1996 to 2001 she worked as a graphic designer at the company called ''Sant'' and in the visual communication studio Grafitti Design. In 2001, she was appointed junior assistant at the Faculty of graphic arts, University of Zagreb, first at the Department of Reproduction Photography, but later at the Department of Printing forms, where she is currently working. She started her postgraduate study in graphic technology at the Faculty of Graphic Arts and completed her Master's Degree, which was entitled ''Influence of different offset printing forms on graphic reproduction quality'' on 13 February 2004. In 2006, she was awarded a scholarship by the Ministry of science, education and sports, which included student traveling arrangements and postgraduate training programme at Forga Institute in München. She completed her doctoral thesis, entitled 'Surface properties categorization of offset printing forms'' on 25 May 2007 at the Faculty of Graphic Arts University of Zagreb. She has been a research associate on many science projects supported by MZOŠ (Ministry of science, education and sports), such as, project code: 128-1201785-2228 New Approach to the Printing Forms Microsurface Characterisation, project code: 128-1281957-1958 "Digitalization of museum art heritage" (since 2007) and a bilateral project with Slovenia 'Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing" since 2010. In 2010 she was awarded a scholarship, which was a part of EU Lifelong Learning Programme for university staff training, founded by the Faculty of chemistry and chemical engeneering in Maribor, Slovenia. In 2013, she was awarded the same scholarship for professional training in Spain, Madrid, at the'' Facultad de Informática de la Universidad Complutense de Madrid''. She was appointed to the research fellow position on 1 March 2011 and to associate professor position on 20 May 2013.
Date of last academic appointment to the teaching and research position	20 May 2013, associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	1. S. Mahović Poljaček, D. Risović, K. Furić, M. Gojo, "Comparison of Fractal and Profilometric Methods for Surface Topography Characterization", App. Sur. Sci. 254 (2008) 3449–3458. (CC) 2. M. Gojo, V. D. Stanković, S. Mahović Poljaček, "Electrochemical Deposition of Gold in Citrate Solution Containing Thallium", Acta Chim. Slov. 55 (2008) 330-337. ISSN: 1318-0207. (CC) 3. B. Lozo, M. Stanić, T. Muck, S. Jamnicki, S. Mahović Poljaček, "Three-Dimensional Ink-Jet Prints: Impact of Infiltrants", Journal of Imaging Science and Technology 52 (2008) 5, 051004-1-051004-8. (SCI)

	4. D. Risović, S. Mahović Poljaček, K. Furić, M. Gojo, "Inferring Fractal Dimension of Rough/porous Surfaces - a Comparison of SEM Image Analysis and Electrochemical Impedance Spectroscopy Methods", App. Sur. Sci. 255 (2008) 3063-3070. (CC) 5. D. Risović, S. Mahović Poljaček, M. Gojo, "On Correlation between Fractal Dimension and Profilometric Parameters in Characterization of Surface Topographies" App. Sur. Sci. 255 (2009) 4283-4288. (CC) 6. D. Novaković, S. Dedijer, S. Mahović Poljaček, "A Model for Improving the Flexographic Printing Plate Making Process" Tehnički vjesnik 17 (2010) 4, 403-410. ISSN: 1330-3651. (SCI ex) 7. S. Mahović Poljaček, D. Risović,T. Cigula, M. Gojo, "Application of electrochemical impedance spectroscopy in characterization of structural changes of printing plates" Journal of Solid State electrochemistry 16 (2012), 3; 1077-1089 (CC)
List of science and art project assigned to in the last 5 year and which are relevant to the doctiral programme	MZOS no. 128-1201785-2228 „Method development for mesuaring area of a printing forms" MZOS no. 128-1281957-1958 „Digitalization of a museum painting heritage" Bilateral project with Slovenia 'Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing" since 2010.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	O. Brajnović, "Adjustment of fotopolymer printing plate to meet qualitative requirements" Master's degree thesis, Faculty of Graphic Arts, Zagreb, (2011).

Table 1. Detailed list of teaching staff

Name	**Nikola Mrvac**
Short CV	Professor Nikola Mrvac, PhD was born on 28 May 1969. in Desni Srediček. He completed hie elementary education in Lasinj and graduated from Graphics high school in Zagreb. In 1994 he graduated from the Faculty of Graphic Arts University of Zagreb, Department of Printing. In 2001. he completed his Master's Degree, entitled ''Typography development in multimedia society'', at the Faculty of Organization and Informatics in Varaždin. He completed his doctoral thesis, entitled ''Synthesis of interactions of selected graphic reproduction parameters" in 2003 at the Faculrty of Graphic Arts at the University of Zagreb and consequently was awarded a PhD degree in the field of graphic technology. After his studies he worked as a graphic arts teacher at the Graphics School in Zagreb in 1994, but in the same year he started working at the Faculty of Graphic Arts in Zagreb, Department of Printing, where he has been a full-time professor ever since. As a research associate and project leader he has been appointed to the following projects, which are an integral part of the National Science Research Programme of the Ministry of science and technology: 1999.- 2002. *Influence of printing techniques and graphic materials on paper reycling efficiency"*, 2002. -2006. *"Specification of paper features and fomulations for digital printing and its recycling"* 2007. - *"A study of technological factors in graphic design for systematic quality improvement"* as an associate in 2007. - *„Evaluation of quantitative and qualitative graphic reproduction process criteria"* as project leader. In 2012, he was appointed research fellow and in 2013 a full-time professor. The quality of his teaching is best demonstrated by his numerous memberships and engagement in faculty teaching boards and associations. (Committee for e-learning strategies, University of Zagreb, Committee for e-learning, Committee for learning and graduate exams at the University of Zagreb). He won the annual award of The society of university teachers, scholars and other scientists for the 2000/2001 academic year in the field of graphic technology, technical sciences. He contributed greatly to creation of a new study programme which was consistent with Bologna regulations. The study programme of Graphic technology university study at the Faculty of Graphic Arts in Zagreb was based on the programme draft proposition written by Nikola. Furthermore, he is one of the coauthors of vocational study programme ''Multimedia, design and application'' of Vocational

	studies in Varaždin. The same programme was accepted by the Faculty of Graphic Arts in Kiseljak, University of Travnik. He cooperated with both institutions for the purposes of higher educational system improvement and study programme adjustment to the up-to-date programme propositions. On the national level, he has been a member of National Council for Curriculum and Assesment and Technology and Informatics Working group. He is included in major decisions on study prugrammes as well as document drafting for the purposes of successful programme delivery. He is the chair of Vocational Education Council and the author of methodology of EVALUS system and EVA software (skill management and evaluation systems). Furthermore, his work activities have been actively promoting work and education in graphics. Until now he has published around 80 research papers (chapters, science journals, collection of papers, and so on).
Date of last academic appointment to the teaching and research position	Full professor on 12 February 2013
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	**Papers published in journals and present in CC (Current Contents), SCI (Science Citation Index), SCI – Expandedu** **1)** Skala, Tibor; Tomašić, Ivan; Mrvac, Nikola; Statistička simulacija protoka čestica kroz netkanu strukturu. // Časopis za tekstilnu tehnologiju i konfekciju. 59 (2010), 6.; 221-227. (SCI-Expanded) **2)** Mrvac, Nikola; Tomiša, Mario; Milković, Marin, Developing a modern model of higher education. // Technics Technologies Education Management. 5 (2010), Number 4, 2010; 700-709. (SCI-Expanded) **3)** Milković, Marin; Mrvac, Nikola; Matijević, Mile; Evaluation of the chromatic assimilation effect intensity in Munker-White samples made by standard methods of rendering. // Tehnički vjesnik, 17 (2010), Number 2; 163-172. (SCI-Expanded) **4)** Vusić, Damir; Mrvac, Nikola; Milković, Marin; The neon colour spreading effect in various surround ambient conditions. // Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku. 18 (2011) Number 4 219 -225. (SCI-Expanded) **5)** Vusić, Damir; Milković, Marin; Mrvac, Nikola; The Influence of the Primary Color Stimuli Selection on the Neon Color Spreading. // *TTEM - Technics Technologies Education Management*. 7 (2012) , 1; 81-87 (SCI-Expanded) **6)** Tomiša, Mario; Mrvac, Nikola; Milković, Marin; Determination of Graphic Design Qualitative Criteria. // *TTEM - Technics Technologies Education Management*. 7 (2012.) , 1; 49-56 **7)** Milković, Marin; Mrvac Nikola; Vusić Damir; Evaluation of the chromatic adaptation effect intensity by "tuning" the desaturated achromatic reproductions printed in the offset. // *Tehnički vjesnik*. 18 (2011) , 4; 519-528. (SCI-Expanded) **8)** Milković, Marin; Mrvac, Nikola; Matijević, Mile. Evaluation of the effect of retinal localized chromatic adaptation intensity on desaturated achromatic reproductions derived by standard rendering methods. // *Color Research & Application*. (2012). (CC) **9)** Milković, Marin; Mrvac, Nikola; Zjakić, Igor. Comparative Analysis of the Intensity of the Induction and Assimilation Effects of the Equivalent Geometric Structures of Graphic Reproductions. // *TTEM - Technics Technologies Education Management*. 7 (2012) 2; 905 – 913 **10)** Milković Marin; Matijević Mile; Mrvac Nikola. Intensity evaluation of the spreading and simultaneous contrast effects based on the dotted White's samples. // *Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku*. 19 (2012) , 3; 521-529 **Papers published in journals present in other significant bibliographic databases**

1) Skala, Tibor; Todorovac, Mirsad; Mrvac, Nikola; Technical Analysis of Analogies of Stereo Displaying Techniques with 3D Generated Scenes in Visualitization // DAAAM International Scientific Book 2008 / Katalinic, Branko (ur.).Vienna : DAAAM International, 2008. Str. 789-796. (INSPEC)
2) Milkovic, Marin; Mrvac, Nikola; Bolanca, Stanislav; Evaluation of the Chromatic Induction Intensity on Munker-White Samples // DAAAM International Scientific Book 2008 / Katalinic, Branko (ur.). Vienna : DAAAM International, 2008. Str. 485-498.
3) T. Skala, N. Mrvac, M. Mikota & I. Pavlović, *Multimedia Image rendering on a distributed computer system*, DAAAM international scientific book 2008, Katalinić, Branko (ur.), DAAAM International Vienna, Vienna 2008, 781-788 (INSPEC)
4) Skala, Tibor; Muža, Robert; Mrvac, Nikola; Render Settings Impact Analyses on Quality of Complex 3D Graphic Structure // DAAAM International Scientific Book 2010 / Katalinic, Branko (ur.). Vienna : DAAAM International, 2010. Str. 863-872.
5) Skala, Tibor; Jelić, Antonija; Mrvac, Nikola; Movement problems of solid object in 3D computer animation // DAAAM International Scientific Book 2010 / Katalinić, Branko (ur.). Vienna : DAAAM International, 2010. Str. 631-638.
6) Matijević, Mile; Mrvac, Nikola; Milković, Marin; Vusić, Damir; Evaluation of Percepcion of Red Color Applied to Koffka Effect // DAAAM International Scientific Book 2010 / Katalinic, Branko (ur.). Viena : DAAAM International, 2010. Str. 259-270.
7) Tomasegovic, Tamara; Zitinski Elias, Paula Yadranka; Baracic, Marina; Mrvac, Nikola; E-learning and Evaluation in Modern Educational System. // US-China Education Review. Vol. 8 (2011) , No. 2; 198-203

Scientific paper reviewed, published in international conference proceedings

1) Babić, Nikša; Pibernik, Jesenka; Mrvac Nikola; Media Study : Motion Graphics // Proceedings of the 50th International Symposium : ELMAR-2008 ; sv. 2 / Grgić, Miroslav ; Grgić Sonja (ur.). Zagreb : ELMAR, 2008. 499-503
2) Mikota, Miroslav; Pavlović, Ivana; Mrvac, Nikola; Influence of the printing technique on the quality of the digitally shot colour portrait // Proceedings, 19th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Next Generation of Intelligent Systems and Solutions" / Katalinić, Branko (ur.). Vienna : DAAAM International, 2008. 863-864
3) Skala, Tibor; Mrvac, Nikola; Todorovac, Mirsad; Koren, Antun; Improving the Quality of Education by Using 3D visualisation Methods // 12th International conference of printing, design and graphic communication Blaž Baromić '08 : proceedings / Zdenka, Bolanča (ur.). Zagreb ; Ljubljana ; Senj : Faculty of Graphic Arts ; Faculty of Natural Science and Engineering, Pulp and Paper Institut ; Matica hrvatska, Ogranak, 2008. 187-191
4) Valpotić, Željko; Zjakić, Igor; Mrvac, Nikola, Criterion Evaluation of Qualitative Characteristics of the Contemporary Offset Printing // Proceedings / 12th International conference of printing, design and graphic communication Blaž Baromić / Bolanča, Zdenka (ur.). Split, Hrvatska : University of Zagreb, Faculty of Graphic Arts, Croatia University of Ljubljana, Faculty of Natural Science and Engineering, Slovenia Ogranak Matice hrvatske Senj, Croatia Pulp and Paper Institute, Ljubljana, Slovenia, 2008. 201-211
5) Bozic, Tomica; Matijevic, Mile; Mrvac, Nikola; Pavlović, Ivana; Changes in the Company Multimedia Environment // Blaž Baromić 09 / Bolanca, Zdenka (ur.). Zagreb : Grafički fakultet u Zagrebu, 2009. 201-204
6) Kovačić, Anja; Matijević, Mile; Mrvac, Nikola; Milković, Marin; Evaluation of the Influence of the Background Colour on the Perception of the Stimulus Contrast // 20 th International DAAAM Symposium: Intelligent Manufacturing

	& Automation: "Focus on Theory, Practice and Education" / Katalinić, Branko (ur.). Vienna : DAAAM International, 2009. 1239-1240 **7)** Matijevic, Mile; Mrvac, Nikola; Milkovic, Marin, Pavlović, Ivana; Mikota, Miroslav; Evaluation of the Perception of Stimulus Contrast in Light Tones of Additive Synthesis // 20 th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Theory, Practice and Education" / Katalinić Branko (ur.). Vienna : DAAAM International, 2009. 1863-1864. **8)** Pavlović, Ivana; Mikota, Miroslav; Mrvac, Nikola; Exposure Correction in Digital Portrait Photography Taken with the Nitraphot Lighting // DAAAAM Symposium "Inteligent Manifacturing & Automation : Focus on Theory, Practice and Education" / Katalinić, Branko (ur.). Vienna : DAAAAM International, 2009. 1449-1450 **9)** Pavlović, Ivana; Mikota, Miroslav; Matijević, Mile; Mrvac, Nikola; Analyzes of the Changes on the Photographic Illustration Realized Throught Electrophotographic Printing // Proceedings of 5th International Symposium on Novelties in Graphics. Ljubljana : Univerza Ljubljana, 2010. 786-790. **10)** Zitinski Elías, Paula Yadranka; Baracic, Marina; Tomasegovic, Tamara; Mrvac, Nikola. E- learning and Evaluation in Modern Educational System, // Proceedings of INTED2010 Conference. Valencia, 2010. 1152-1157 **11)** Mrvac, Nikola; Tomiša, Mario; Milković, Marin; Vusić, Damir; Primjena web 2.0 alata u edukaciji tehničke struke // Proceedings Book 11th International Foundrymen Conference / Unkić, Faruk (ur.). Sisak : Faculty of Metallurgy University of Zagreb, 2011. 184-191 **12)** Mrvac, Nikola; Vreto; Sanjin, Primjena e-učenja u multimedijskom okruženju // Proceedings of the 2nd International scientific and professional conference of graphic technology and design / Babić, Darko (ur.). Kiseljak : Univerzitet u Travniku, Fakultet za tehničke studije, 2011. 203-215 **13)** Vusić, Damir; Milković, Marin; Mrvac, Nikola; Percepcija boje u cross-media komunikacijskim sustavima // *Tiskarstvo 2012 & Design* / Žiljak, Vučić, Jana (ur.). Zagreb : FS, FotoSoft, ADAM-KAJ, 2012. 27-34 **14)** Tomić Gorana; Mrvac Nikola; Matijević Mile; Kozina Goran; Elektronsko izdavaštvo – budućnost časopisa // *16. međunarodna konferencija tiskarstva, dizajna i grafičkih komunikacija Blaž Baromić - Zbornik Radova* / Mikota, Miroslav (ur.) **15)** Tomaš, Ante; Mrvac, Nikola; Vrtlar, Fabijanko; Borković, Jakov; Principi uštede u novinskom tisku // *Zbornik radova - Matrib 2012* / Alar, Željko ; Jakovljević, Suzana (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2012. 337-342 **16)** Tomaš Ante; Mrvac Nikola; Schreiber Zdeslav; Emarcora Karlo; Oblikovanje modela normiranja vremena tiska i potrošnje papira u novinskoj proizvodnji // *16. međunarodna konferencija tiskarstva, dizajna i grafičkih komunikacija Blaž Baromić - Zbornik radova* / Mikota, Miroslav (ur.). Zagreb : Hrvatsko društvo grafičara, Hrvatska, 2012. 402-408 **17)** Čačić, Marko; Mrvac, Nikola; Matijević, Mile; Milković, Marin; Tomiša, Mario; Korisnička sučelja u web 2.0 okruženju // *Zbornik radova - MATRIB 2012* / Alar, Željko ; Jakovljević, Suzana (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2012. 42-49 **18)** Bevanda Ana; Mrvac Nikola; Matijević Mile; Utjecaj simultanog kontrasta na percepciju otiska // *16. međunarodna konferencija tiskarstva, dizajna i grafičkih komunikacija Blaž Baromić - Zbornik radova* / Mikota, Miroslav (ur.). Zagreb : Hrvatsko društvo grafičara, Hrvatska, 2012. 180-189
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	**Project leader**: "Quantum and quality evaluation criteria of graphic reproduction" code: 128-1281955-1960, National Scientific Research Program MZOS. **Associate** – 2007. - „Technological factors of graphic design study for systematic

	quality improvement“ project code: 128-1281955-1962, principal researcher: Full professor Stanislav Bolanča, PhD.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	**4** 1. Skala, Tibor, Učinkovitost postupka generiranja grafičkih sadržaja na raspodijeljenim računalnim sustavima / doktorska disertacija. Zagreb : Grafički fakultet, 26.02. 2010, 228 str. Voditelj: Mrvac, Nikola ; Divjak, Saša. 2. Tomiša, Mario, Određivanje kvalitativnih kriterija dizajna grafičkoga proizvoda u procesu grafičke komunikacije / doktorska disertacija, Zagreb: Grafički fakultet, 22.03. 2012., 122 str. Voditelj: Mrvac, Nikola. 3. Vusić, Damir, Efekt neonskoga proširivanja boje u procesu grafičke reprodukcije / doktorska disertacija. Zagreb : Grafički fakultet, 22.03. 2012, 166 str. Voditelj: Mrvac, Nikola. 4. Matijević, Mile,

Table 1. Detailed list of teaching staff	
Name	***Branka Lozo***
Short CV	Born on November 1st, 1961 in Zagreb, maiden name: Vodopija **Education:** Classical Grammar School in Zagreb, year of graduation: 1980, Foreign languages: English, Italian, French Faculty of Graphic Arts University of Zagreb, year of graduation: 1986, Rector's Award in 1985, completed Mater's degree, entitled: Contribution to paper quality optimization, supervisors: A. Golubović I Z. Bolanča, completed doctoral thesis in 2005: ''The stability of Ink Jet prints studied by non-destructive methods'', supervisors: T. Muck I N. Knešaurek **Work experience and appointments to teaching and research positions:** Assistant and senior assistant until 2006, assistant professor until 2011, associate professor **Appointments to science positions:** Research associate in 2006, senior research associate in 2010, research fellow in 2011. Scientist's Identification Number and bibliography: 172126, http://bib.irb.hr/mzos/lista-radova?autor=172126 Training: Helsinki University of Technology: Raman i UV Raman spectroscopy, FTIR 2005. Norwegian University of Technology and Science, Trondheim: SEM i LM, microscopy, 2005. Naravoslovno-tehniška fakulteta Univerze v Ljubljani: 3D InkJet Printing, academic year 2006./2007. Centre Technique du Papier, Grenoble: Deinking floatation of flexo and flexo-improved prints, ERIC, 2006 Naravoslovno-tehniška fakulteta Univerze v Ljubljani: Chromogenic colour print **Project leadership:** National project, Ministry of science, education and sports (MZOS): Innovative graphic materials, 2008/13 Bilateral project, Croatian-German: Treatments of Fiber-based Materials for Improved Food Packaging, 2013 Bilateral project, Slovenian- Croatian, New graphic applications with chromogenic printing inks, 2011/12. ac. year Grant holder for the Faculty of Graphic arts for Cost FP 1104 New possibilities for print media and packaging - combining print with digital, 2012/16. ac. Year **Other international projects:** Croatian coordinator at Cost FP 1003: Impact of renewable materials in packaging for sustainability –Development of renewable fibre and bio-based materials for new packaging applications, 2010/2014.

	Cost E48: The Limits of Paper Recycling, 2004/2008 Cost E46: Improvements in the Understanding and Use of De-inking Technology, 2004/2008 Cost E32: Characterisation of Paper Surfaces for Improved Paper Grades, 2003/2007 **Teaching:** Undergraduate, graduate and postgradute study at the Faculty of Graphic Arts University of Zagreb, courses taught in Croatian and English. She was supported by the University of Zagreb for delivery of The History of Printing course in a foreign language in 2011; currently acting as a supervisor Naravoslovno-tehniškoj fakulteti Univerze v Ljubljani, doctoral study, currently acting as a supervisor **Supervisions of completed doctoral thesis** M. Stanić, 2010, first doctoral thesis written and completed in English language at the Faculty of Graphic Arts S. Jamnicki, 2001 **Memberships and duties:** Principal committee for the discipline of technical sciences – field of chemical engineering, mining, oil and geological engineering, metalurgy, textile technology and graphic technology, 2013/2017. Board of Directors at European Fiber and Paper Research Organisation, EFPRO, 2012/2015 Croatian standards institute, Technical committe 6 for paper and pulp CEN - European Committee for Standardisation TC 172 The Society for Imaging Science and Technology, USA Project reviews for European Science Foundation, 2010 Editorial board of journal Celluloza si Hartie, Braila, Romania Editorial board of journal Acta Graphica, Zagreb, Croatia Publication Chair za NIP/DF Conference, Seattle, Washington, 2013 Program Chair for Special papers za NIP/DF Conference, Quebec, Canada, 2012 Program Chair for Europe and Middle East za NIP/DF Conference, Minneapolis, Minnesota, 2011 Organisation for guest lecturer Mr Steve Simske HP Labs, USA at the Faculty of Graphic Arts, 2012 Organisaton of international PhD student workshop: COST Training school: New Technologies fortreatments in the end-of-use of packaging materials, Faculty of Graphic Arts, 2011 Organisational board of International workshop COST Strategic Workshop: The Future Needs of the Paper Industry, u sklopu CEPI Paper Week, Brussels, Belgium, 2009 Organisation of INGEDE seminar and lecture by Mr Andreas Faul at the Faculty of Graphic Arts in Zagreb, 2008 Organisation of bilateral Croatian-Slovenian student seminar: Zero.99 Non-Stop Student Seminar at the Faculty of Graphic Arts, 2008 Organisation of presentation of 3D Ink Jet print Z-Corp i Ib-Procadd d.d. , Zagreb, Mimara Museum, 2007 Organisation of COST E48 The Limits of Paper Recycling project converence, Zagreb, Hotel Palace, 2006
Date of last academic appointment to the teaching and research position	14 February 2011, associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	Müller, Günter; Hanecker, Elisabeth; Blasius, Kai; Seidemann, Constanze; Tempel, Lydia; Sadocco, Patrizia; Ferreira Pozo, Beatriz; Boulougouris, Georgios; Lozo, Branka; Jamnicki, Sonja; Bobu, Elena: *End-of-Life Solutions for Fibre and Bio-Based Packaging Materials in Europe,* Packaging Technology and Science. 26 (2012), 7; 09-11-2012-1-15

	Levlin, J-E; Grossmann, H; Read, B; Ervasti, I; Hooimeijer, A; Lozo, B; Sain-Armand, J; Cochaux, A; Faul, A; Ringman, J; Stawicki, B; Bobu, E; Miranda, R; Blanco, A; Stanić, M: *The Future of Paper Recycling in Europe: Opportunities and Limitations*, G. Manchester, PITA, 2010. Jamnicki, Sonja; Pèlach Serra, Maria Àngels; Lozo, Branka; Stanić, Maja; Barušić, Lidija: *Deinking flotation of recycled linerboard for food packaging applications*, Cellulose chemistry and technology. 44 (2010), 10; 481-488 Branka Lozo, Ivana Bolanča, Zdenka Bolanča, Damir Modrić; *Recycled paper – the influence of digital prints,* Drvna industrija, 53, 4 (2005), 203 – 210 Stawicki, Bartek; Lozo, Branka; Lajić, Branka: *Energy Management Guidelines in Pulp and Paper Production,* Cellulose chemistry and technology. 44 (2010), 10; 521-530
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	National project MZOS: Innovative graphic materials, 2008/2013. Bilateral german-croatian: Treatments of Fiber-based Materials for Improved Food Packaging, 2012/2013 Bilateralni slovenian-croatian: New graphic applications with chromogenic printing inks, 2011/2012 Grant holder for institution of Faculty of Graphic Arts for Cost FP 1104 New possibilities for print media and packaging - combining print with digital, 2012/2016 Croatian coordinator in Cost FP 1003: Impact of renewable materials in packaging for sustainability –Development of renewable fibre and bio-based materials for new packaging applications, 2010/2014 Croatian coordinator in Cost E48: Limits of Paper Recycling, 2004/2008 Croatian coordinator in Cost E46: Improvements in the Understanding and Use of De-inking Technology, 2004/2008
Number of successful supervision undertakings which resulted in completion of doctoral thesis	2 supervisions of successfully completed doctoral studies: M. Stanić: *Verification of methods in the analysis of structure, surface and permanence of 3D Ink Jet printing materials;* 23 November 2010, the first dissertation written and defended in English at the Faculty of Graphic Arts: S. Jamnicki: *Evaluacija prikladnosti različitih klasa recikliranih papira za izradu zdravstveno ispravne prehrambene ambalaže;* 27 April 2011
Table 1. Detailed list of teaching staff	
Name	***Diana Milčić***
Short CV	Diana Milčić graduated at the Faculty of Mechanical Engineering and Naval Architecture in 1989 at the study course of mechanical engineering, programme type Mechanical Engineering Constructions. Upon completion of studies, Diana worked at „Končar – Generatori“ in generator constructions using programme package CADDS Computervision. From 1 March 1993 to 1 June 1994 she worked at the Faculty of Mechanical Engineering and Naval Architecture as part-time research assistant at the Department of elements of machines and constructions. From 1 June 1994 to 1 October 1996 she worked at „TKT-Toplota“ in construction

	and management of production. From 1 October 1996 to 1 February 2002 she worked at the Faculty of Mechanical Engineering and Naval Architecture on a research project „Dynamical analysis, synthesis and control of complex movements of biomechanic and technical systems“ Since 1 February 2002 she has worked at the Faculty of Graphic Arts. In 1997 Diana earned her Master's degree at the Faculty of Mechanical Engineering and Naval Architecture, and she earned her PhD degree in May 2001, also at the Faculty of Mechanical Engineering and Naval Architecture at the University of Zagreb. Diana is project leader of „Standardisation of ecologically acceptable processes of graphic communications“ 128-1281955-1951, funded by the Ministry of science, education and sports. Diana collaborated in the realisation of a bilateral project „Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing „
Date of last academic appointment to the teaching and research position	Full professor since 9 June 2009.
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. Donevski, Davor; Milčić, Diana; Šarčević, Iva, Assessing RGB Device Calibration Control Level, Tehnicki Vjesnik 19 (2012), 1; 607-610 2. Milčić, Diana; Vučina, Adisa; Donevski, Davor,Packaging Model in Graphic Industry, 15th International Research/Expert Conference ”Trends in the Development of Machinery and Associated Technology” (2011), S. Ekinović, Y. Uctug, J. V. Calvet (ur.). Prag, (2011) 1-6 3. Donevski, Davor; Milčić, Diana; Banić, Dubravko, Effect of data scaling on color device model fitting, Journal of Industrial Engineering and Management. 3 (2010) 399-407 4. Milčić, Diana; Banić, Dubravko; Donevski, Davor, Application of Logistics Methods in Print Production, Proceedings ICIL'2010 / Fogliatti de Sinay, Maria Cristina ; Fae, Maria Ines; Canen, Alberto G. (ur.), Rio de Janeiro, 2010. 5. Donevski, Davor; Milčić, Diana; Banić, Dubravko, Increasing the Accuracy of Colour Reproduction System Evaluation by Proper Sampling, Acta graphica. 22 (2010) 3-4; 1-5 6. Donevski, Davor; Milčić, Diana; Banić, Dubravko, Model for Implementing TQM in the Graphic Arts Industry, Tehnički vjesnik. 16 (2009) , 1; 31-34 7. Milčić, Diana; Donevski, Davor; Banić, Dubravko, Integrirani sustavi upravljanja u grafičkoj industriji, Poslovna izvrsnost. 2 (2008), 1; 63-71
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	She is leader of the national scientific project „Standardisation of ecologically acceptable processes of graphic communications“ 128-1281955-1951., 2007 - ongoing National scientific project „ Threedimensional virtual applied atropology“ 120-1962766-3109., 2007 - ongoing Bilateral slovenian-croatian „Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing“ 2010/2011
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1. Davor Donevski 2. Daria Mustić
Tablica 1. Detaljni popis nastavnika na doktorskom studiju	
Name	***Jesenka Pibernik***
Short CV	Prof. Jesenka Pibernik, PhD, graduated at the Faculty of Architecture at the University of Zagreb in 1985. She earned her Master's degree in 1992 in USA,

	University of Texas at Austin (supervisor: Charles Moore, AIA). After graduation she stayed in USA and was a contracted worker on several architecture projects. Since 1995 she has lived in Zagreb. Professor Jesenka was awarded several architecture awards and recognitions in architecture competitions and her work was displayed at several exhibitions, at Zagreb Salon, amongst other. In 1998, after one-year part-time job, Jesenka was employed at the Faculty of Graphic Arts at the University of Zagreb. She earned her PhD degree in 2003 at the Faculty of Architecture at the University of Zagreb. She co-authored the university coursebook „Digital space design“ published by Croatian University Press. Jesenka teaches at undergraduate, graduate and postgraduate levels at the Faculty of Graphic Arts at the University of Zagreb within the Department of Art History and Graphic Design and she also holds the position of Dean of Finance and General Affairs. Jesenka has participated actively in several research projects in Croatian, in an EU-funded project within the COST program, as well as in a project within the framework of Science and Innovation Investment Fund. Her professional interests include: graphic design, web design, mobile graphics, design of communication services for people with complex communicational needs, user experience.
Date of last academic appointment to the teaching and research position	associate professor since 14 March 2010
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	1. Pibernik, J.; Dolić J., Kanižaj, B.: „What is creativity in web portfolio design“ Digital Creativity 2013 (CC) 2. Dolić, J., Pibernik J., Car Ž. : Design and Developement of Symbol Based Services for Persons with Complex Communication Needs Acta Graphica 24 (2013) 1-2, (INSPEC) 3. Pibernik J.; Dolić J.; Dilberović I.: „Proces dizajna T-majica tehnikom digitalnog tiska na tekstilu“. Tekstil : časopis za tekstilnu tehnologiju i konfekciju. 60 (2011) , 10; 504-511 „T-shirt design process by digital direct printing technique“ Textile: Journal for textile technology and clothing. 60 (2011), 10; 504-511 4. Pibernik, J.; Brozović M.; Dolić J. „Percepcija eko tema u dizajnu modne odjeće za mlade“ Tekstil 1-2 vol. 58 (2009), str. 1-10 (SCI) „Perception of eco-matters in designing fashion wear for the young“ Textile 1-2 vol. 58 (2009), str. 1-10 (SCI) 5. Brozović, M.; Pibernik, J.; Banić, D. „Quality of Color Lightness Reproductions“. Journal of Imaging Science and Technology 52 (2008), 6; 060507-1-060507-8 (CC). 6. Pibernik J.: „Digitalna reprezentacija prostora i vremena u procesima globalizacije“, Društvena istraživanja: časopis za opća društvena pitanja 74 (2004), 6; UDK 1:3/33 ISSN, 1330-0288 (CC).
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Scientific projects 1. Project „Quantum and quality evaluation criteria of a graphical reproduction“ MZOS no. 128-1281955-1960, project leader Nikola Mrvac 2. Project “ICT systems for persons with complexed communicational needs”, financed from University development fund in Zagreb. 3. COST projekt Action IC1003: European Network on Quality of Experience in Multimedia Systems and Services (QUALINET) domain: Informational and communicational technologies. 4. Projekt EuropeAid/131920/M/ACT/HR, Science and Innovation Investment Fund Grant Scheme, Title: „ICT Competence Network for Innovative Services for Persons with Complex Communication Needs“

Number of successful supervision undertakings which resulted in completion of doctoral thesis	Nikola Djurek: „Study of the technology of development, readability and aesthetics of the Croatian script“, 2009
Table 1. Detailed list of teaching staff	
Name	***Nina Knešaurek***
Kratki životopis	Nina Knešaurek was born in Zagreb where she attended elementary and secondary school. After high school she enrolled to the Faculty of Technology at the University of Zagreb, having graduated in 1977. At the same faculty, she was admitted to postgraduate study. With her Master's thesis “Color study in graphic reproduction“ she earned her Master's degree in 1985 supervised by prof. Dorotheja Turkalj, PhD. Her doctoral dissertation, under supervision of prof. Dorotheja Turkalj, PhD, earned her a PhD degree in 1998 at the Faculty of Chemical Engineering and Technology at the University of Zagreb.
Date of last academic appointment to the teaching and research position	18 October 2010
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1.Kulčar,Rahela; Friškovec, Mojca;Klanjšek Gunde, Marta; Knešaurek, Nina **Dynamic colorimetric properties of mixed thermochromic printing inks**.// Coloration technology.127 (2011), 6; 411-417 2.Kulčar,Rahela; Klanjšek Gunde, Marta; Knešaurek,Nina. **Dinamic Colour Possibilities and Functional Properties of Thermochromic Printing Inks**. // Acta graphica :revija za grafičku tehnologiju, inženjerstvo i dizajn. 23 (2012) ; 25-36 3. Mikota,Miroslav; Knešaurek, Nina; Kulčar,Rahela. **Analiza pristupa kataloškoj fotografiji tkanina s efektom sjaja.** // Tekstil : časopis za tekstilnu tehnologiju i konfekciju. 59 (2010), 3 ; 80-85 4. Kulčar, Rahela; Friškovec, Mojca; Klanjšek Gunde, Marta; Knešaurek, Nina. Colorimetric properties of UV-thermochromic inks // *13th International Conference on printing, design and graphic communications, Blaž Baromić, Proceedings,* Zagreb : Zagreb: Faculty of Graphic Arts ; Ljubljana: Faculty of Natural Science and Engineering ; Senj: Matica hrvatska, Ogranak ; Ljubljana: Pulp and Paper Institut, 2009. 89-93 5. Kulčar, Rahela; Friškovec, Mojca; Klanjšek Gunde, Marta; Knešaurek, Nina; Lozo, Branka. Some experimental properties on reversibility of leucodye thermochromic inks // *Conference Proceedings, 9th Seminar in Graphic Arts*. Pardubice, 2009. 48-53 6. Kulčar, Rahela; Friškovec, Mojca; Knešaurek, Nina; Sušin, Barbara; Klanjšek Gunde, Marta. Colour changes of UV-curable thermochromic inks // *Proceedings of the 36th International Research Conference of iarigai, Vol.XXXVI*, Darmstadt, Germany : Sveučilišna tiskara, Zagreb, 2009. 429-434
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Project code:P1-0030 (D),L2-1097 (D).Principal researchers: Marta Klanjšek Gunde, Branka Lozo. Project title**: New graphic applications with chromogenic printing inks**. Kemijski inštitut, Ljubljana Faculty of Graphic Arts, Zagreb
Number of successful	Branka Lozo – **A study of Ink jet print stability by nondestructing methods**,

supervision undertakings which resulted in completion of doctoral thesis	Faculty of Graphic Arts (2005) co-supervisor Ivana Bolanča Mirković **– Ecologically more favourable offset ink and printing deinking mechanisms,** Faculty of Graphic Arts (2007) co-supervisor Rahela Kulčar – **Colorimetric analysis and stability parameters of UV-thermochromic colors**, Faculty of Graphic Arts (2010) co-supervisor
Tablica 1. Detalji popis nastavnika na doktorskom studiju	
Name	***Lidija Mandić***
Short CV	Lidija Mandić, PhD, is associate professor at the Department of Reproduction Photography at the Faculty of Graphic Artls. Lidija graduated, earned her master's degree and earned her PhD degree in 2007 at the Faculty of Electrical Engineering and Computing. The area of her research and teaching interests are color management systems, image display models, color display models, testings of all types of screens and application of new technology in graphic process. Lidija was an external associate at the Ministry of science project 0036015 *"Multimedia communication systems"*, and today she is an associate at the project 036-0361630-1635 *"Quality management of image in radiofusion of digital video signal"* She is project leader of project code 128-1281957-1958 *"Digitalisation of museum painting heritage"*. She is deputy project leader in projects funded by the Fund for University development: *„Excellence centre for computer vision*" and *„ICT systems for people with complex communication needs*". Lidija is program coordinator of CEEPUS program CIII-RS-0704-01-1213 „Research and education in the field of Graphic Engineering and Design". She is also team leader at the Faculty of Graphic Arts on an IPA project ICT Competence Network for Innovative Services for Persons with Complex Communication Needs. Lidija authors 5 papers in CC and SCI journals, 3 papers in other journals, 59 papers in international scientific conference proceedings. She has been a member of editorial staff of Acta Graphica (HR) since 2009. She is also a reviewer at:IJECES-International Journal of Electrical and Computer Engineerinf Systems, JIE-Journal of Electronic Imaging, Tehnički vjesnik, Tekstil, Acta Graphica, conferences: ISPA i IEEE ICIP.
Date of last academic appointment to the teaching and research position	20 May 2013 – associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	Lidija Mandić, Sonja Grgić, Mislav Grgić, Influence of background and surround on image color matching, *International Journal of Imaging Systems and Technology,* Volume 17, Issue 4, Pages 244-251, 2007 Strgar Kurečić, Maja; Agić, Darko; Mandić, Lidija, *Digitalni fotografski sustav za vjernu reprodukciju boja različitih materijala, Tekstil : Časopis za tekstilnu tehnologiju i konfekciju*. 57 (2008) ; 623-631 Poljičak, Ante; Mandić, Lidija; Agic, Darko, *Robustness of a DFT Based Image Watermarking Method Against AM Halftoning*, *Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku*. 18 (2011) , 2; 161-166 Strgar Kurečić, Maja; Agić, Darko; Mandić, Lidija, *Developing a custom colour target for artwork imaging, Imaging science journal*. 59 (2011) , 6; 317-331 Poljičak, Ante; Mandić, Lidija; Agić, Darko, *Discrete Fourier transform–based watermarking method with an optimal implementation radius, Journal of electronic imaging*. 20 (2011) , 3; 033008-1-033008-8 Mandić, Lidija; Strgar Kurečić, Maja; Poljičak, Ante; Agić, Darko, Changes in Perception of Colorimetric Differences Caused by Different Backgrounds, *Proceedings of the 53rd International Symposium ELMAR-2011*
List of science and art project assigned to in the last 5 year and which are relevant to the	"Management of a picture quality in radiodiffusion of a digital video signal" code. 036-0361630-1635, Ministry of Science, Croatia (2007) Digitalization of museum painting heritage (no. 128-1281957-1958) Ministry of

doctoral programme	Science, Croatia (2007) University development fund: "Excellence centre for computer sight" University development fund: "ICT systems for persons with complexed communicational needs" *IPA projekt ICT Competence Network for Innovative Services for Persons with Complex Communication Needs*
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1. Poljičak, Ante. *Protection of ownership of a reproduced image by insertion of digital watermark"*, Zagreb, Faculty of Graphic Arts, 30 June 2011

Table 1. Detailed list of teaching staff

Name	***Igor Zjakić***
Short CV	Igor Zjakić graduated at the Faculty of Graphic Arts after completion of Graphic high school, programme type Printing. In 2000, he enrolled to postgraduate study at the Faculty of Graphic arts and in 2002 he became the first Master degree holder in Graphic technology in Croatia. In January 2005, he earned his doctoral degree at the Department of Printing at the Faculty of Graphic Arts, with a thesis entitled "Optimalisation of grating system reproduction in print". Since 1993, he has been working at "Graf" as CEO, then in "AKD" as head of facilities and supervisor of technological processes as well as the CEO. He participated in the project for design of new Croatian passport and other protected documents. Until today, he has published more than 50 scientific and professional papers in Graphic technology, and has participated in many international and domestic professional conferences. He has authored several chapters published in international scientific books as well as several research papers in international journals with international review. In his 10-year experience in economy, he completed several courses related to graphic technology and management in Zurich, London and Budapest. For the last several years, he has been collaborating in the work of a scientific-professional conference "Blaž Baromić" as member of Program and Organisation Committee. He has also been a member of Program Committee of international conference DAAM headquartered in Wien, where he heads the part of "Graphic technology". At German organization IFRA, he is advisor for matters of quality in paper print. He wrote the following textbooks in the area of graphic technology and design: "Offset print quality management", "Colorimetry in multimedia systems" and "Psychology of colors".
Date of last academic appointment to the teaching and research position	14 March 2011
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. Zjakić, Igor; Parac-Osterman, Đurđica; Irena; New approach to metamerism measurement on halftone color images, Measurement 44 (2011), p.p. 1441-1447. 2. Zjakić, Igor; Parac-Osterman, Đurđica, Bates, Glogar Martinia Ira; Influence of a textile structure on raster value increase in screen printing, Tekstil 60 (1). (2011), p.p. 1-8. 3. Zjakić, Igor; Bates, Irena; Milković, Marin. A Study of Dot Gain and Gamut for Prints Made With Highly Pigmented Inks, Technical Gazette 18, 2(2011), p.p. 227-235. 4. Martina Skenderović Božičević, Andreja Gajović, Igor Zjakić, Identifying a

	common origin of toner printed counterfeit banknotes by micro-Raman spectroscopy, Forensic Science International, 223 (2012) 314–320, 5. Milković, Marin; Mrvac, Nikola; Zjakić, Igor. Comparative Analysis of the Intensity of the Induction and Assimilation Effects of the Equivalent Geometric Structures of Graphic Reproductions, *TTEM - Technics Technologies Education Management*. Volume 7 (2012) , Nuber 2; 6. Bates, Irena; Zjakić, Igor; Milković, Marin. Lightfastness and weatherfastness of overprint pattern obtained on polymer substrates, *Tehnički vjesnik,* 18 (2011) , 3; 349-356 7. Markuš, Marko; Bertić, Irena; Zjakić, Igor. Application of web offset coldset black with variable content of vegetable oils, DAAAM International Scientific Book 2008, Katalinic, Branko (ur.). Vienna, Austria: DAAAM International, 2008. p.p. 449-462 8. Zjakić, Igor; Bertić, Irena; Novaković, Marijana. Metamerism Influence on the Printing Quality of Different Digital Offset Printing Techniques, DAAAM International Scientific Book 2008, Katalinic, Branko (ur.). Vienna, Austria: DAAAM International Vienna, 2008. p.p. 977-986.
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1. A study of technological graphic design factors for systematic quality improvement (128-1281955-1962) 2. Colors and inks in the process of an eco-friendly and sustainable development (117-1171419-1401)
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1

Table 1. Detailed list of teaching staff	
Name	***Karolj Skala***
Short CV	Karolj Skala was born on 21 January in Subotica. He graduated in 1974 at the programme type Electrical engineering, and earned his Master's degree in 1979 under the topic of *„Transfer of digital data by semiconductor laser".* He defended his doctoral thesis *„Analysis of reflection detectability in wideangle noncoherent optical illumination"* at the Faculty of electrical engineering and computer science in 1983. Prof. Karolj Skala, PhD, tenured fellow (2005) at the Ruđer Bošković Institute in Zagreb, holds the position of Head of Centre for Informatics and Computer Science. At the University of Zagreb je is a full professor, tenured, and he teaches at the following courses: Optoelectronic systems, Digital multimedium and Multimedia communication, Programming logical systems. He is also project leader of several national scientific and technological projects. He initiated the CRO GRID national programme which generated the CRO NGI. He has participated in the EU projects COST 254, COST 276 i COST IC 0805 from Croatia. He successfully completed five EU FP 6, and seven EU FP7 projects. He was project leader of many development projects in the area of purpose optoelectronic and laser devices. These projectes resulted in production and income in the international market. He founded the eScience technology in Croatia and he has been working on eInfrastructural connection with European Research Area. He has started several eScience scientific services. He has initiated the development of scientific Cloud computing scientific infrastructures and has equipped a visualisation laboratory with EU funds. So far, his scientific-research work includes: 72 research papers, 42 professional

	papers, one published book in co-authorship, three seminar textbooks, one university textbook and edition of 18 research papers proceedings, and he has also supervised 25 graduate papers. He has been a member of the Academy of Technical Sciences and adjunct member of Hungarian Academy of Science.
Date of last academic appointment to the teaching and research position	2008 – tenured full professor at the Faculty of Graphic Arts. After 16 years of working at the Faculty of Graphic Arts the dean has stopped the initiation of procedure of election to the position even after three filed requests by the Department of multimedia and information systems, as well as by K. Skala, PhD.
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. Skala, Tibor; Todorovac, Mirsad; Skala, Karolj, Distributed reliable rendering method for parametric modeling. **Journal of, Circuits Systems and Computers** 22 (2013) , 2; 1-19 2. Skala Karolj, Lipić, Tomislav; Sović, Ivan; Grubišić, Ivan; Grbeša, Igor, Toward 3D Thermal Models Standardisation for Human Body in Motion **Quantitative InfraRed Thermography Journal. (**2013). (in press) 3. Skala, Tibor; Skala, Karolj, Afgan Enis Impact of 3D Graphic Structure Complexity to the Rendering Time, **Journal of, Circuits Systems and Computers** 22 (2013) , 8; 12-21 4. Afgan, Enis; Bangalore, P.; Skala, Karolj., Application Information Services for Distributed Computing Environments. **Future generation computer systems**. 27 (2010) , 2; 173-181 5. Skala, Karolj; Lipic, Tomislav; Sovic, Ivan; Gjenero, Luko; Grubisic, Ivan. 4D Thermal Imaging System for Medical Applications. **Periodicum biologorum**. 113 (2011) , 4; 407-416 6. Davidovic Davor; Skala, Karolj; Belusic, Danijel; Telisman-Prtenjak, Maja. Grid implementation of the Weather Research and Forecasting model. **Earth Science Informatics**. 3 (2010) , 4; 199-208 7. Medved Rogina, Branka; Skoda, Peter; Skala, Karolj; Michieli, Ivan. Metastability Testing at FPGA Circuit Design using Propagation Time Characterization. **Radioelectronics & Informatics Journal**. 51 (2010) ,4; 4-8 8. Poljak-Blazi, Marija; Kolaric, Darko; Jaganjac, Morana; Zarkovic, Kamelija; Skala, Karolj; Zarkovic, Neven. Specific thermographic changes during Walker 256 carcinoma development : Differential infrared imaging of tumour, inflammation and haematoma. **Cancer detection and prevention**. 32 (2009) , 5/6; 431-436 9. Stevanovic, Radomir; Topic, Goran; Skala, Karolj; Stip?evi?, Mario; Medved Rogina, Branka. Quantum Random Bit Generator Service for Monte Carlo and Other Stochastic Simulations. **Lecture Notes in Computer Science**. 4181 (2008) ; 508-515 10. Karainova Aneta:Anastassov, Emanoul, Gurov, Tudor; Stevanovic, Radomir, Skala, Karolj, Variance Reduction MCM with Application in Environmental Studies; Sensitivity Analysis, **Application of Mathematics, Engineering and Economics,** (2008); 549-558
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1) *Grid Enabled Infrastructure Development*, EU F6 contract No: 002356 Commission of the European Communities, Brusseles, 2004-2006. 2) CenVis - Centre for Scientific Visualisation, EU FP6, 043947 , 2007-2009 3) IVAB - Interactive Visual Analysis of Bio-signals, EU FP6, 2007 4) SEE-GRID - South Eastern European GRid-enabled eInfrastructure Development, 2004-2006 EU FP6

	5) SEE-GRID-2 - South Eastern European GRid-enabled eInfrastructure Development 2, 2006-2008 6) SEE GRID SCI - SEE-GRID eInfrastructure for regional eScience, EU FP7, 2008-2010 7) DARIAH - Digital Research Infrastructure for the Arts and Humanities, EU FP7, 2008-2010 8) EGEE-II - Enabling Grids for E-science-II, EU FP6, 2006-2008 9) EGEE-III - Enabling Grids for E-science-III, EU FP7, 2008-2010 COST # 0805, *Open European Network for High Performance Computing on Complex Environments*, 2010-2013 10) AIS DC Application Information Services for Distributed Computing Environments Acronym, EU FP7, 2011-2013 11) SCI BUS eScience infrastructure for storm and waterspout prediction in the Adriatic sea EU FP7 2012-2014 12) E2LP, Embedded Computrer Engineering Learning Platform, EU FP7, 2012-2015 **NOTE**: EU FP6 SEE GRID 2 (under 5) was conducted at the Faculty of Graphic Arts EU FP7 SEE GRID SCI (under 6) was conducted in difficult circumstances at the Faculty of Graphic Arts due to the Dean's opposition.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	GF 0

Table 1. Detailed list of teaching staff

Name	***Associate professor Sanja Bjelovučić Kopilović, PhD***
Short CV	Sanja Bjelovučić Kopilović was bornd on 15 July 1962 in Zagreb. She graduated at the Faculty of Electrotechnical Engineering University of Zagreb in 1985, programme type, Industrial electronics, with a topic: „Calculation and design of isochronic map of heart activities“, (supervisor Prof. S. Tonković, PhD) (discipline: technical sciences, fields: electrotechnical engineering; branch: electronics). She earned her Master's degree on 31 January 1990 at the Faculty of Mechanica Engineering and Naval Architecture at the University of Zagreb, with a topic: „Human movement modeling as basis for biomechanic movement regulation anaylsis“ (supervisor: prof. O. muftić, PhD). She graduated in 1997 at the same Faculty, same supervisor, with a topic: „Contribution to determining dynamic features of vehicles and passengers.“ In the period from 1 October 1985 to 31 December 1992 she was employed at the „Software centre“ of the „Nikola Tesla“ factory as system analytic, in the Electrotechnical institute „Rade Končar“, on complex activities of developmental testings, at the Computer centre of Zagrebačka banka, as a programmer, at the Institute of Anthropology at the University of Zagreb, as researcher-programme – statistician. From the period 1987-1990 she worked additional, contracted, for company „Animar“, Zagreb, in 3D animations on Amiga computer. Since 1 October 1991, during her permanent employment at the Institute of Anthropology, she did the work o fan assistant in additional activity at the course Technical Mechanics at the Faculty of Graphic Arts University of Zagreb. On 1 January 1993, she began her permanent employment at the Faculty of Graphic Arts University of Zagreb, where she was elected to the position of research assistant at the Department of Mechanical Engineering. On 15 May 1998 she was elected assistant professor, and on 1 October 1999 she was elected HEad of Departent of Mechanical Engineering at the Faculty of Graphic Arts University of Zagreb. 1 January 2004 she was elected associate professor. On 15 December 2012 she was re-elected to the same position. Her re-election was extended due to her parental leave. She now heads the Department of Engineering Graphics and Mechanics.

	She is fluent in English, and uses Italian and German passively.
Date of last academic appointment to the teaching and research position	15 December 2012
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. K. Štih, S. Bjelovučić Kopilović, Data Base as 3D Model – Data Security Basics, Tiskarstvo 08, Scientific Meeting Printers and Graphic Artists of Printing Technology Croatian Academy of Engineering, Stubičke toplice, Croatia, 2008, pp. 47-54. 2. K. Štih, S. Bjelovučić Kopilović, 3D modeliranje računalom – metodologija rada sa studentima, Tiskarstvo 08, Scientific Meeting Printers and Graphic Artists of Printing Technology Croatian Academy of Engineering, Stubičke toplice, Croatia, 2008, http://www.ziljak.hr/tiskarstvo/tiskarstvo08/ 3. S. Bjelovučić Kopilović, K. Štih, Blender – Open Source E - Learning System, Tiskarstvo 2010, Scientific Meeting Printers and Graphic Artists of Printing Technology Croatian Academy of Engineering, Stubičke toplice, Croatia, 2010, http://www/tiskarstvo.net/tiskarstvo2010/ 4. K. Štih, P. Marković, S. Pul, S. Bjelovučić Kopilović, , Od mikroprojekta do sustavnog rješenja – 3D model povijesne građevine, 2. međunarodni simpozij "Digitalizacija kulturne baštine Bosne i Hercegovine", Sarajevo, Bosna i Hercegovina, 2010. 5. S. Bjelovučić Kopilović, P. Marković, K. Štih and S. Pul, Approach towards the Digitisation of the Croatian Cultural Heritage, Proceedings of the 11th International Design Conference – Design 2010, Workshop: Design Graphics with Security Elements, Dubrovnik - Croatia, 2010, pp. 1935-1936. 6. S. Bjelovučić Kopilović, Suvremena računalna grafika u 3D aplikacijama, Međunarodni znanstveni skup Tiskarstvo 2012 & Design, AKADEMIJA TEHNIČKIH ZNANOSTI HRVATSKE – Centar za grafičko inženjerstvo, Donja Stubica, Hrvatska, 2012., str. 6.-11. 7. S. Bjelovučić Kopilović, B. Vuković, V. Kopilović, Kvaternioni u 3D grafičkim aplikacijama i robotici primijenljivoj u grafičkoj industriji, Blaž Baromič 2012, 16th International Conference on Printing, Design and Graphic Communications, Senj, Croatia, 2012 8. S. Bjelovučić Kopilović, I. Strelar, K. Štih, Postavljanje kinematičkih kontrola na 3D kostur humanoidnog lika u 3ds Max-u, Međunarodni znanstveni skup TISKARSTVO&DESIGN 2013, Terme Tuhelj, Croatia, 2013.
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Scientific-research project : „Graphics of document and securities, (128-1281957-1961), Ministry of Science, education and sports
Number of successful supervision undertakings which resulted in completion of doctoral thesis	0

Table 1. Detailed list of teaching staff

Name	***Tadeja Muck***
Short CV	Associate professor Tadeja Muck, PhD, was born on 5 May 1971 in Brežice. She completed her elementary school in Sevnica and her high school in Celje in 1989. In the same year, she was admitted to the Department of Chemical Technology at the Naravoslovni tehnički fakultet in Ljubljana where she graduated in 1984. She completed her postgraduate study in paper restoration at the Faculty of Biotechnology, having defended her Master thesis in 1998. At the Naravoslovni tehnički fakultet, at the Department of Graphic and Information Technology, she defended her dissertation in 2002, with a topic: Interactions on paper surface with drop printing. In 2003, she was elected assistant professor.

	After completion of her studies, she spent one year working at the factory Radeče papir at the development of waterproof packaging. Fron 1996 to 1998 she was a Slovenska Znanstvena Fondacija scholar and she worked on *sinteza stilbenskog crnila sa polistilbena smrekove skore*. Until 1999 she worked as researcha assistant at the Faculty of Biotechnology, Department of Wood Chemistry. In the same year, she started working at the Institute for cellulose and paper in Ljubljana where she started working as seniour researcher II after the completion of her doctoral study. She was also a postdoctoral project leader: Development method for typographic paper analysis. Since 2004, she has been working at Naravoslovni tehnički fakultet, Department of Graphich and Information Technology as a lecturer in the field of: Graphic processes technology and standardisation, color management and interactive media. Her area of scientific research is investigation of interactions in print, printed electronics and image processing.
Date of last academic appointment to the teaching and research position	19 february 2009, associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	**Research papers** **1.** KAVČIČ, Urška, PAVLOVIČ, Leon, PIVAR, Matej, ĐOKIĆ, Miloje, BATAGELJ, Boštjan, MUCK, Tadeja. Printed electronics on recycled paper and cardboards = Tiskana elektronika na recikliranem papirju in kartonu. *Inf. MIDEM*, 2013, vol. 43, no. 1, str. 50-57, ilustr. http://www.midem-drustvo.si/Journal%20papers/MIDEM_43%282013%291p50.pdf. [COBISS.SI-ID 2869872] **2.** HLADNIK, Aleš, MUCK, Tadeja, STANIĆ, Maja, ČERNIČ, Marjeta. Fast Fourier transform in papermaking and printing: two application examples. *Acta polytech. Hung.*, 2012, vol. 9, no. 5, str. 155-166. http://www.uni-obuda.hu/journal/Hladnik_Muck_Stanic_Cernic_37.pdf. [COBISS.SI-ID 2826608] **3.** PAVLOVIĆ, Živko, MUCK, Tadeja, HLADNIK, Aleš, KARLOVIĆ, Igor. A comparative study of offset plate quality parameters using image processing and analytical methods. *Acta polytech. Hung.*, 2012, vol. 9, no. 6, str. 181-193. http://www.uni-obuda.hu/journal/Pavlovic_Muck_Hladnik_Karlovic_38.pdf. [COBISS.SI-ID 2826864] **4.** KÖNIG, Silva, GREGOR-SVETEC, Diana, HLADNIK, Aleš, MUCK, Tadeja. Assesing the lightfastness of prints by image chrominance histogram quantification. *J. imaging sci. technol.*, Nov./Dec. 2012, vol. 56, no. 6, str. 060507/1-060507/7, ilustr. [COBISS.SI-ID 2873712] **5.** GREGOR-SVETEC, Diana, ROŽIĆ, Mirela, MUCK, Tadeja, LOZO, Branka. Natural zeolite as filler in base ink jet paper sheet. *Nordic Pulp and Paper Research Journal*, 2012, vol. 27, no. 4, str. 721-728. [COBISS.SI-ID 2799472] **6.** KÖNIG, Silva, MUCK, Tadeja, GREGOR-SVETEC, Diana. The ageing resistance of offset and electrophotographic prints. *Nordic Pulp and Paper Research Journal*, 2012, vol. 27, no. 4, str. 739-749. [COBISS.SI-ID 2797168] **7.** KAVČIČ, Urška, MAČEK, Marijan, MUCK, Tadeja, KLANJŠEK GUNDE, Marta. Readability and modulated signal strength of two different ultra-high frequency radio frequency identification tags on different packaging. *Packag. technol. sci.*, 2012, vol. 25, iss. 7, str. 373-384, ilustr. http://onlinelibrary.wiley.com/doi/10.1002/pts.988/pdf, doi: 10.1002/pts.988. [COBISS.SI-ID 4847386] **8.** STAREŠINIČ, Marica, MUCK, Tadeja, STANIĆ, Maja, KLANJŠEK GUNDE, Marta. Development of image analysis procedures for evaluation of printed electronics quality = Razvoj metod slikovne analize za oceno tiskovne prehodnosti tiskane elektronike. *Inf. MIDEM*, mar. 2011, letn. 41, št. 1, str. 12-17. [COBISS.SI-ID 2585712] **9.** KAVČIČ, Urška, MAČEK, Marijan, MUCK, Tadeja. Impact study of disturbance on

readability of two similar UHF RFID tags. *Inf. MIDEM*, sep. 2011, letn. 41, št. 3, str. 197-201. [COBISS.SI-ID 2684528]
10. KÖNIG, Silva, MUCK, Tadeja, HLADNIK, Aleš, GREGOR-SVETEC, Diana. Recycled papers in everyday office use. *Nordic Pulp and Paper Research Journal*, 2011, vol. 26, no. 3, str. 349-355, ilustr. [COBISS.SI-ID 2597744]
11. KAVČIČ, Urška, MUCK, Tadeja, LOZO, Branka, ŽITNIK, Arjana. Readability of multi-colored 2D codes. *TTEM. Tech. technol. educ. manag.*, 2011, vol. 6, no. 3, str. 622-630, ilustr. http://www.ttem-bih.org/pdf/ttem_6_3_web.pdf. [COBISS.SI-ID 2673008]
12. BARBARIĆ-MIKOČEVIĆ, Željka, DŽIMBEG - MALČIĆ, Vesna, MUCK, Tadeja. Digital suplicator prints recycling possibilities. *Appita j.*, Jan/Mar 2010, vol. 63, no. 1, str. 45-52, ilustr. [COBISS.SI-ID 2351984]
13. KAVČIČ, Urška, MUCK, Tadeja, FRIŠKOVEC, Mojca. Ne le efektni tisk : 2D-kode, odtisnjene s termokromnimi tiskarskimi barvami. *Grafičar (Ljubl.)*, 2010, [Št.] 4, str. 14-17, ilustr. [COBISS.SI-ID 2428272]
14. KAVČIČ, Urška, MUCK, Tadeja, LOZO, Branka, ŽITNIK, Arjana. Multi-color 2D datamatrix codes with poorly readable colors. *JGED*, Nov 2010, vol. 1, no. 1, str. 1-8, ilustr. [COBISS.SI-ID 2476912]
15. KAVČIČ, Urška, MUCK, Tadeja, BRAČKO, Sabina, LOZO, Branka. Readability of processed digitally printed two-dimensional codes. *J. imaging sci. technol.*, May/Jun. 2010, vol. 54, no. 3, str. 030502/1-030502/6, ilustr. [COBISS.SI-ID 2370160]
16. JAVORŠEK, Dejana, MUCK, Tadeja. Defining the ink distribution in z-direction with SEM and CLSM. *Celuloză şi hărtie*, 2009, vol. 58, no. 2, str. 8-13, ilustr. [COBISS.SI-ID 2247536]
17. MAUKO, Alenka, MUCK, Tadeja, MLADENOVIČ, Ana. 3D visualization and quantification of bowing marble microstructure. *Constr. build. mater.*. [Print ed.], jun. 2009, vol. 23, iss. 6, str. 2380-2385, ilustr., doi: doi:10.1016/j.conbuildmat.2008.10.009. [COBISS.SI-ID 1464167]
18. MUCK, Tadeja, JAVORŠEK, Dejana, KREFT, Marko. Use of confocal microscopy as a nondestructive method in the study of ink jet dot formation. *J. imaging sci. technol.*, July/Aug. 2009, vol. 53, no. 4, str. 040201/1-040201/6, ilustr. [COBISS.SI-ID 2219888]
19. MAUKO, Alenka, MUCK, Tadeja, MIRTIČ, Breda, MLADENOVIČ, Ana, KREFT, Marko. Use of confocal laser scanning microscopy (CLSM) for the characterization of porosity in marble. *Mater. charact.*. [Print ed.], 2009, issue 7, vol. 60, str. 603-609, doi: doi:10.1016/j.matchar.2009.01.008. [COBISS.SI-ID 1469799]
tipologija 1.08 -> 1.01
20. DEBELJAK, Mirica, MUCK, Tadeja, GREGOR-SVETEC, Diana. Evaluation of printability on synthetic papers printed by UV ink jet. *Nordic Pulp and Paper Research Journal*, 2009, vol. 24, no. 3, str. 313-318. [COBISS.SI-ID 2275440]
21. DŽIMBEG - MALČIĆ, Vesna, BARBARIĆ-MIKOČEVIĆ, Željka, MUCK, Tadeja. Ovrednotenje recikliranja digitalnih odtisov z optičnimi metodami in s slikovno analizo = Recycling digital prints characterization with optical methods and image analysis. *Papir (Ljublj.)*, 2009, letn. 37, št. 2, str. 30-33. [COBISS.SI-ID 2310768]
22. MAUKO, Alenka, MUCK, Tadeja, MLADENOVIČ, Ana, MIRTIČ, Breda. Uporaba konfokalne laserske mikroskopije za ugotavljanje poroznosti naravnega kamna na primeru kalcitnega marmorja = Porosity of natural stone and use of confocal laser scanning microscopy on calcitic marble aged in laboratory. *Geologija*. [Tiskana izd.], 2008, knj. 51, 1, str. 77-85. [COBISS.SI-ID 1551957]
23. MUCK, Tadeja, JAVORŠEK, Dejana. Kakovost odtisov v UV-tehnologiji. *Grafičar (Ljubl.)*, 2008, [Št.] 2, str. 20, 30-32. [COBISS.SI-ID 2012528]
24. LOZO, Branka, STANIĆ, Maja, JAMNICKI, Sonja, MAHOVIĆ POLJAČEK, Maja, MUCK, Tadeja. Three-dimensional ink jet prints - impact of infiltrants. *J. imaging sci. technol.*, Sep./Oct. 2008, vol. 52, no. 5, str. 051004/1-051004/8, ilustr. [COBISS.SI-ID 2105968]
25. JAVORŠEK, Dejana, MUCK, Tadeja. Obstojnost UV ink jet odtisov na različnih

	materialih. *Papir (Ljublj.)*, 2008, letn. 36, št. 1, str. 26-[30]. [COBISS.SI-ID 2030704] **26.** JAMNICKI, Sonja, BARBARIĆ-MIKOČEVIĆ, Željka, STANIĆ, Maja, LOZO, Branka, MUCK, Tadeja. Introduction of computer print-outs in the recycling process of printed folding box-board. *Prog. pap. recycl.*, 2008, vol. 18, no. 1, str. 4-8, ilustr. [COBISS.SI-ID 2149232]
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	
Number of successful supervision undertakings which resulted in completion of doctoral thesis	LOZO, Branka. *A study of ink jet print stability by nondestructing methods: doctoral dissertation.* Zagreb: [B. Lozo], 2005. 114 f., ilustr. [COBISS.SI-ID 1578096]

Table 1. Detailed list of teaching staff

Name	***ANTUN KOREN***
Short CV	Antun Koren, PhD was born on 21 August 1951 in Zagreb. He completed his elementary and high school in Zagreb where he graduated in 1976 at the School centre for mechanical engineering and electrotechnical engineering. In 1978, se graduated at the College for internal affairs in Zagreb. He completed his graduate study at the Faculty of Political Sciences in Zagreb in 1983, and he completes his postrgraduate study at the Faculty of Political Sciences in Zagreb in 1986. At the Faculty of Organisation and Informatics in Varaždin, he defended his doctoral dissertation in 1995, titled „Protection of information in graphich industry of Croatia“, which earned him a PhD degree in informational sciences. Since 1984 to 1987 he worked in education at the educational centre of MUP RH and at the Railways educational centre. Since 1987 he has been working as lecturer at the Faculty of Graphic Arts in Zagreb. In addition to teaching, Antun Koren, PhD, has been active in scientific research as well. The area of his interest is primarily directed to information and its transponing by graphic methods and processes with emphasis to its protection from destruction occurrences. From 1992 he participated in the Homeland war as an auxiliary group of MUP RH in the activities of managing security at the Croatian Printing Institute in Zagreb. He was awarded a testimonial of Homeland war.
Date of last academic appointment to the teaching and research position	2011
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1.6.8. **Antun Koren,** Ivan Pogarčić, Jana Žiljak Vujić, Is eLearning conditioned by Educational Context?, IIAS - InterSymp Conference ; 2nd CISKS: Communication and Information Sciences in the Knowledge Society, Proceedings of the Special Focus Symposium on 2nd CISKS: Communication and Information Sciences in the Knowledge Society, 2007., LJ. Bakić-Tomić; V. Šimović, (ed.). Zagreb, ECNSI, 2007.; ISBN 978-953-7210-04-5; pp. 102-106 1.6.9. **Antun Koren,** Jasna Jurum-Kipke, Stjepan Petrač, Internet veze i njihova isplativost u tiskarstvu, TISKARSTVO 07 / Žiljak, Vilko (ed). - Zagreb : Akademija tehničkih znanosti hrvatske, 2007. (ISBN: 978-953-7064-06-8)

Web izdanje: www.grf.hr./akoren/tiskarstvo07

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1.6.22. Pap K., Lajković J., **Koren A.** and Posavec D., Modeling and simulation of extreme security printing, 11th International Design Conference – Design 2010, Dubrovnik 2010., ISBN 978-953-96020-8-4 , pp. 1923-1928

1.7. Research paper reviewed, published in national conference proceedings

1.7.1. **Antun Koren,** Stjepan Petrač, Povećanje produktivnosti rada poboljšanjem i automatizacijom mrežne komunikacije primjenom AppleScript-a, Tiskarstvo 05, FS i Grafički fakultet, 2005., Web izdanje: www.grf.hr./akoren/tiskarstvo05

1.7.2. **Antun Koren,** Stjepan Petrač, Simetrične i asimetrične internet veze i njihova isplativost u tiskarstvu, Tiskarstvo 06, FS i Grafički fakultet, 2006.
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Symmetric and asymmetric internet connection and their cost effectiveness in typography, Typography 06, FS and Graphical Academy, 2006. Web izdanje: www.grf.hr./akoren/tiskarstvo06

1.7.3. **Antun Koren,** Klaudio Pap, Vilko Žiljak, Planiranje grafičke proizvodnje dinamičkim alatima, TISKARSTVO 07 / Žiljak, Vilko (ur.), Stubičke toplice, Zagreb : Akademija tehničkih znanosti hrvatske, 2007., pp. 17-

	18, ISBN: 978-953-7064-08-2., Web izdanje: www.grf.hr./akoren/tiskarstvo07 Planning Graphical Production with Dinamic Tools, TYPOGRAPHY 07/ Žiljak, Vilko (ur.) Stubičke toplice, Zagreb: Croatian Academy of Tehnical Science, 2007., pp. 17-18, ISBN 978-953-7064-08-2 1.7.4. Matijevic M., **Koren A.,** Mrvac N. Graficki fakultet Sveucilista u Zagrebu, VDP (Variable data printing) i marketing, 2. simpozij, Utjecaj znanja na ljudske vrijednosti, Varaždin 2008. p.64-67 1.7.5. **Koren A.**, Matijevic M., Mrvac N. Graficki fakultet Sveucilista u Zagrebu, Razvoj WEB 2.0 kroz internet i razlike u odnosu na WEB 1.0, 2. simpozij, Utjecaj znanja na ljudske vrijednosti, Varaždin 2008. p.76-79
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	2.3.1. 2008. – SEE-GRID eInfrastructure for regional eScience (SEE GRID SCI) , GF koordinator
Number of successful supervision undertakings which resulted in completion of doctoral thesis	

Table 1. Detailed list of teaching staff	
Name	***Ivana Žiljak Stanimirović, PhD, Assistant Professor***
Short CV	Ivana Žiljak Stanimirović, PhD, Assistant Professor at the Faculty of Graphic Arts in Zagreb, was born in 1978 in Zagreb. She finished elementary school and high school in Zagreb, and in 1996 she enrolled in the Design School at the Faculty of Architecture in Zagreb. She graduated in January 2001. Since 2001 she has worked as a research fellow at the Faculty of Graphic Arts, where she participated in scientific work and instruction. In 2002 she enrolled in the postgraduate studies at the Faculty of Graphic Arts in Zagreb. In 2005 she defended her Master's thesis in technical sciences, field of graphic technology , titled „Graphics of documents with spot colors from the ultraviolet area“ at the Faculty of Graphic Arts in Zagreb, supervised by Darko Agić, PhD. In 2007 she defended her doctoral dissertation titled „Designing security graphics with variable cooors of digital printing in the visible and invisible part of the spectrum“ at the Faculty of Graphic Arts, University of Zagreb, supervised by Darko Agić, PhD. In 2009 she was appointed research associate in the scientific discipline of technical sciences, field of graphic technology. She was appointed assistant professor in 2009, and senior research associate in 2010. In 2010 she was awarded the National Award for Science and the Award for

	Excellence in Science of the Ministry of science, education and sports o the Republic of Croatia. Ivana and her associates received 60 prestigious awards for discoveries in the area od security graphics design and INFRAREDESIGN, in Croatia and abroad, from the USA to Malaysia. The areas of work of Ivane Žiljak Stanimirović, PhD, include the theoretical and practical improvement of design and printing technology with emphasis on security and security graphics using ultraviolet and infrared colors, micro-lenses and holography. She is working in the area of typography and individualized grating elements. Her latest findings are related to programming visible and invisible security codes with multimedia application. She has been a professional member of the Croatian Designers Society since 2000. She has applied her scientific findings in many graphic solutions. She has presented her work at 20 selected international group exhibitions in Croatia and abroad. She has held 10 solo exhibitions, the most significant being the INFRAREDESIGN exhibitions in Croatia and abroad. Together with her associates she has written three books in English and Croatian that have been internationally reviewed:“Infrared Design”, “Design of Digital Screening” and “Infrared Security Graphics“ that serve as a basis for courses on security graphics. She has held more than 40 lectures at international scientific conventions and 5 lectures as a a guest lecturer. Her lecture titled „Infrared Security Print: New Method Of Infrared Security Printing” (PIRA, Vilnius, 2009) was judged the greatest novelty in graphic technology of security printing. Two years later she was the ambassador and guest lecturer at the security printing conference titled "10th International Conference on Security Printing & Alternative Solutions in Central / Eastern Europe and Rusia / PIRA International". For the last five years she has published 8 A category papers entered in Current Contents (4) and SCI, SCI Expanded databases (4), 8 B category papers, 6 C category papers and 18 D category papers in the area of security graphics design that are relevant for the doctoral program area. As the result of scientific work, together with her associates she has filed three patents from the area of protective security graphics at the State Intellectual Property Office; „Infrared printing with process dyes“, “ZRGB apparatus for dual detection“, “Protection of portrait reproduction with security portrait“. In the last five years, Ivana and her associates received 60 prestigious awards for INFRAREDESIGN findings at international innovation exhibitions. In 2013 she successfully completed the supervisor workshop titled „Professionalization of PhD Supervision“ at the University of Zagreb, led by dr. Lucas Zinner (University of Vienna).
Date of last academic appointment to the teaching and research position	She was appointed assistant professor in 2009. She was appointed senior research associate in 2010.
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral	**A**. CATEGORY OF PAPERS: papers published in a journal represented in CC (Current Content), SCI (Science Citation Index), SCI Expanded

programme	**1.** V. Žiljak, K. Pap, **I. Žiljak**: "CMYKIR Security Graphics Separation in the Infrared Area", Infrared Physics and Technology, Vol. 52., No. 2-3, Elsevier B.V. (2009.), p. 62-69, ISSN 1350-4495 (CC, SCI, SCI-Expanded, IF 0.932) **2. I. Žiljak**, K. Pap, J. Žiljak Vujić: "Infrared Design on Textiles as Product Protection", Tekstil, Vol. 58, No. 6, (2009.), p. 239-253, ISSN 0492-5882 (SCI Expanded, IF 0.050) **3.** K. Pap, **I. Žiljak**, J. Žiljak Vujić: "Image Reproduction for near Infrared Spectrum and the Infraredesign Theory", Journal of Imaging Science and Technology, Vol. 54, No. 1, (2010.), p. 1-9, ISSN 1062-3701 (CC, SCI, SCI-Expanded, IF 0.513) **4.** V. Žiljak, K. Pap, **I. Žiljak**: "Infrared Hidden CMYK Graphics", The Imaging Science Journal, Vol. 58, No.1, (2010.), p. 20-27, ISSN: 1368-2199 (CC, SCI Expanded, IF 0.260) **5.** V. Žiljak, K. Pap, **I. Žiljak Stanimirović**: "Development of a Prototype for ZRGB Infraredesign Device", Technical Gazette, Vol. 18, No.2, (2011.), p. 153-159, ISSN: 1330-3651 (SCI-Expanded, IF 0.083) **6.** V. Žiljak, K. Pap, **I. Žiljak Stanimirović**, J. Žiljak Vujić: "Managing dual color properties with the Z - parameter in the visual and NIR spectrum", Infrared Physics & Technology, Vol. 55, Elsevier B.V. (2012.), p. 326-336, ISSN 1350-4495 (CC, SCI, SCI-Expanded, IF 0.932) **7.** N. Stanić Loknar, **I. Žiljak Stanimirović**, K. Tajana: „Managing pixel deformation with pseudo-random values in infrared security graphics", TTEM Technics Technologies Education Management, Vol. 8, No. 1., (2013.), p. 59-69, ISSN 1840-1503 (SCI Expanded) **8. I. Žiljak Stanimirović**, J. Žiljak Vujić, B. Morić, M. Rudolf: „Security printing with colorant control in the UV, visual and INFRARED spectrum", TTEM Technics Technologies Education Management, Vol. 8, No.2, (2013.) p. 480-485, ISSN 1840-1503 (SCI Expanded) B. CATEGORY OF PAPERS: Papers published in journals represented in other significant databases **1.** K. Pap, **I. Žiljak,** J. Žiljak-Vujić: "Process Color Management for Producing Double Images", Annual 2008 of the Croatian Academy of engineering Book Series: Annual of the Croatian Engineering, Zagreb, (2008); p. 395-410, ISSN: 1332-3482 (ISI Proceeding, CPCI-Thomson Reuters) **2.** V. Žiljak, K. Pap, **I. Žiljak-Stanimirović**, J. Žiljak-Vujić: "Information Control in the Infrared Area of Spectrum", Informatologia. Vol. 42, No.1. (2009.) p. 1-9, ISSN: 1330-0067 (INSPEC; SCOPUS) **3. I. Žiljak-Stanimirović**, K. Pap, V. Žiljak: "Double Separation Method for Translation of the Infrared Information into a Visible Area", Journal of Information and Organizational Sciences, 33, (2009.); p. 219-225, ISSN 1846-3312 (INSPEC, LISA) **4.** D. Agić, **I. Žiljak-Stanimirović**, T. Koren: "Designer's Custom Screening Elements Development", Annual 2009 of the Croatian Academy of Engineering, (2009.), p.

133-149, ISSN 1332-3482 (ISI Proceeding, CPCI-Thomson Reuters).

5. P. Poldrugač, A. Koren, **I. Žiljak-Stanimirović**, T. Koren: "Information on Securities and their Protection", Informatologia, Vol. 43, No.3, (2010.), p. 198-203, ISSN 1330-0067 (SCOPUS)

6. M. Barišić, K. Pap, **I. Žiljak-Stanimirović**, V. Žiljak: „Double Image Design in Newspaper Production", Acta Graphica, Vol. 21 (2010.) p. 27-33, ISSN 0353-4707 (INSPEC).

7. M. Turčić, V. Žiljak, **I. Ž.–Stanimirović:** „Individual Stochastic Screening for the Development of Computer Graphics", Acta Graphica, Vol 22, No 3-4 (2011.), p. 69-78, ISSN 0353-4707 (INSPEC).

8. J. Žiljak Vujić, **I. Žiljak Stanimirović**, O. Međugorac: „Hidden Information in Visual and Infrared Spectrum", Informatologia, Vol. 45, No. 2, (2012.), p. 96 - 102, ISSN: 1330-0067 (INSPEC; SCOPUS)

C CATEGORY OF PAPERS – papers not included in CC, SCI and other significant databases listed under B

1. J. Žiljak-Vujić, K. Pap, **I. Žiljak**: "Design with Mutant Modulation Screen Elements", International Circular of Graphic Education and Research Journal 1 (2008), Published by the International Circle of Educational Institutes for Graphic Arts, Technology and Management, Moscow State University of Printing Arts, Moscow, Russia, p. 22-28, ISSN 1868-0712

2. K. Pap, V. Žiljak, **I. Žiljak**: "Research of new Graphic Production Planning Methods with SVG Technology", International Circular of Graphic Education and Research Journal 1 (2008), Published by the International Circle of Educational Institutes for Graphic Arts, Technology and Management, Moscow State University of Printing Arts, Moscow, Russia, p. 40-47, ISSN 1868-0712

3. I. Žiljak, J. Ž. Vujić, K. Pap: "Design of Security Graphics with Infrared Colours", International Circular of Graphic Education and Research Journal 2 (2009), , Published by the International Circle of Educational Institutes for Graphic Arts, Technology and Management, Moscow State University of Printing Arts, Moscow, Russia, p. 24-31, ISSN 1868-0712

4. J. Žiljak-Vujić, N. Stanić-Loknar, **I. Žiljak**, M. Rudolf, T. Koren: "New Mutation Screen Element „Soft Rhomb", International Journal Advanced Engineering 1 (2009). p. 255-263, ISSN: 1846-5900

5. **I. Žiljak Stanimirović**, D. Agić, J. Žiljak Vujić: "Hidden Infrared Image in a Uniform Cmyk Separation Hue"; JGED, Novi Sad: Jurnal of Graphic Engineering and Design, Vol. 3. No2, (2012.), p. 8-12, ISSN 2217-379X

6. D. Agić, **I. Stanimirović Žiljak**, A. Agić, N. Stanić Loknar: "Degradation of Dual Image for Visual and near Infrared Spectrum at repeated CMYK/RGB Rendering", Journal of Graphic Engineering and Design, Volume 4 (1), (2013.), p.13-16. ISSN 2217-379X

D. CATEGORY OF PAPERS. Papers published in international conference proceedings held abroad and in Croatia

1. I. Žiljak, J. Žiljak Vujić, K. Pap: "Colour Control with Dual Separation for Daylight

	and Daylight / Infrared Light", Proceedings of 35th International Research Conference IARIGAI, AIDO – Asociacion Industrial de Optica, Color e Imagen, Valencia, (2008), pp. 273-279 **2.** J. Žiljak Vujić, K. Pap, S. Plehati, **I. Žiljak**, V.Kropar-Vančina, "Parametar Modified Screen Element Mutant r70 in Security Graphic", Proceedings of the 10th International Design Conference, (2008), pp. 1491-1495, ISBN: 978-953-96020-8-4 **3. I. Žiljak**, K. Pap, J. Žiljak Vujić, T. Bogović, S. Plehati, "Pseudo Color in Infrared Design", Proceedings of the 10th International Design Conference of Graphic Media, (2008), pp. 1497-1501, ISBN: 978-953-96020-8-4 **4.** N. Stanić Loknar, **I. Žiljak**, M. Rudolf, T. Koren, "Security Paper Thickness as an Element of Protection Against Counterfeiting", Proceedings of the 10th International Design Conference of Graphic Media, (2008), pp. 1481-1485, ISBN: 978-953-96020-8-4 **5.** D. Agić, L. Mandić, **I. Žiljak**, M. Strgar Kurečić, "Achieving the Same Color Visual Output on the Print by Applying cmy and cmyk Combination of Inks", Proceedings of the 10th International Design Conference of Graphic Media, (2008), pp. 1449-1452, ISBN: 978-953-96020-8-4 **6. I. Žiljak**, K. Pap, V. Žiljak, "Translation of the Infrared into a Visible Area with Double Separation", Proceedings of the 19th Central European Conference on Information and Intelligent Systems, (2008) pp. 397-400, ISBN: 978-953-6071-04-3 (INSPEC) **7. I. Žiljak**, Ž. Mrcelić, L. Dujić, P. Marincel, J. Žiljak Vujić, "Research of Mutant Screen Element Stochastic Application", Proceedings, 19th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Next Generation of Intelligent Systems and Solutions", (ed. B. Katalinić), Trnava, (2008), pp. 1553-1554. ISBN: 978-3-901509-68-1 (ISI Proceeding) **8.** K. Pap, J. Žiljak-Vujić, **I. Žiljak**, "Screen Element Shape R73 Mutation with Method of Growth Function Parameterization", Proceedings, 19th International DAAAM Symposium, Intelligent Manufacturing & Automation, Focus on Next Generation of Intelligent Systems and Solutions, (ed. B. Katalinić), Trnava, (2008), pp. 1017-1018, ISBN: 978-3-901509-68-1 (ISI Proceeding) **9. I. Žiljak**, K. Pap, J. Žiljak Vujić, "The Print of the Double Picture and Infraredesign in the Space of the Security Graphics"; Proceedings of the 36th International Research Conference of IARIGAI, Advances in Printing and media technology, Stockholm Publikacija: Advances in Printing and Media Technology (ed. Nils, Enlund, Lovreček, Mladen). (2009), pp. 445-448. **10.** J. Žiljak-Vujić; **I. Žiljak Stanimirović**; I. Pogarčić; "Hidden Information with Infraredesign", Annals of DAAAM for 2010 & proceedings the 21st international DAAAM symposium intelligent manufacturing&automation: focus on interdisciplinary solutions (ed. Branko Katalinić), (2010.), pp. 249-250 ISBN: 978-3-901509-73-5 (EBSCO, Academic Search Complete) **11. I. Žiljak Stanimirović**, R. Anayath, T. Bogović, "The Infraredesign with Individualised Screening", International Design Conference, Design Graphics with security elements, Volume 4, (2010), pp. 1863-1868, ISBN: 978-953-7738-08-2 **12.** T. Koren, **I. Žiljak Stanimirović**, A. E. Politis, M. Barišić, "The Steganography of the Typography in the Digital Printing Technology", Proceedins of 11th

	International Design Conference of Graphics with Security Elements, Vol. 4, (2010), pp. 1897-1902, ISBN: 978-953-7738-08-2 **13. I. Žiljak Stanimirović**: "Infraredesign Printing Technology which Combines Visual and Infrared Spectrum", pozvano, plenarno predavanje, 16th International Conference on Printing, Design and Graphic Communications Blaž Baromić (2012.), Senj, Hrvatska; 2012. p.,14-36, ISSN1848-6193, ISBN 9771848169006 **14**. **I. Žiljak Stanimirović**, I. Akalović, J. Žiljak Vujić: "Design and Print of Hidden Information on Leather with Spot Inks That Have Known Z Factor", 16th International Conference on Printing, Design and Graphic Communications Blaž Baromić 2012, Senj, Hrvatska; (2012.) p. 479-490, ISSN1848-6193, ISBN 9771848169006 **15.** M. Friščić, **I. Žiljak Stanimirović,** J. Žiljak Vujić: "Infrared Technology In Flexographic Printing With Spot Colors", 16th International Conference on Printing, Design and Graphic Communications Blaž Baromić 2012, Senj, Hrvatska; (2012.), p. 503-512, ISSN1848-6193, ISBN 9771848169006 **16.** D. Jurečić, N. Stanić, V. Žiljak, B. Lajić, **I. Žiljak Stanimirović:** "Algorithms and Original Code for Measuring the Paper Quality And Empty Spaces In The Corrugated Board" 16th International Conference on Printing, Design and Graphic Communications Blaž Baromić2012, Senj, Hrvatska; (2012.) p 491-502, ISSN1848-6193, ISBN 9771848169006 **17.** J. Žiljak Vujić, **I. Žiljak Stanimirović**, A. Hoić: "Reproduction of Art Paintings with their Status in the Near Infrared Spectrum", IARIGAI 2012; Advances in Printing and Media Technology, Vol. 39, Ljubljana, Slovenia, (2012.), p. 123-130, ISSN 2225-6067, ISBN 978-3-9812704-5-7 **18**. **I. Žiljak Stanimirović**, J. Žiljak Vujić, M. Matas: "Infrared Colorants as Twins for Security Printing of Documents and Securities", 45th Conference of the International Circle of Educational Institutes for Graphic Arts Technology and Management (IC), Toronto, Canada (2013.), p. 28-35. ISSN 1868-0712
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	She is associate on a project „Digitalization of a museum painting heritage" 128-1281957-1958, within scientific program „Digital systems in typography" 1281957. She is associate on a project „Graphic of a document and securities, 128-1281957-1961".
Number of successful supervision undertakings which resulted in completion of doctoral thesis	Supervisor in the grading procedure of the following doctoral dissertation: doctoral candidate Branka Morić Kolarić: "Development of document protection elements by separation of colours for ultraviolet, visible and near-infrared spectrum."
Table 1. Detailed list of teaching staff	
Name	***Klaudio Pap***
Short CV	Klaudio Pap, PhD, is an associate professor at the Faculty of Graphic Arts. He was born in 1963 in Zagreb. After finishing a high school program with special emphasis on mathematics he studied at the Faculty of Electrical Engineering, University of Zagreb and graduated from the Computing Techniques program in 1988. He earned his Master's degree in 1997 at Computing Sciences program at the same faculty, where he also received his doctoral degree in 2004. The same year he was appointed research associate at the Zagreb university and assistant professor in the courses Computer Record and Computer Graphics. He has been an associate member of the Croatian Academy of Engineering since 2005, and became a senior research associate and associate professor at the Zagreb

	university in 2010. In his work he has been involved in research, development and application of computers in the area of computer graphics, image and text processing, computer models and simulations, web technology, digital printing and graphic programming languages. He received the annual scientific award "Rikard Podhorsky" for 2010 from the Croatian Academy of Engineering and the National Award for Science for 2010, awarded by the Croatian Parliament. Together with his associates he received many gold medals for Infraredesign innovation in Croatia and abroad. He is the co-author of five (5) development products and six (6) software packages. He is the co-author of three (3) patents. He received the diamond award for digital printing in 1996 and more than fifty (50) international awards for the „INFRAREDESIGN®“ innovation. In his early work he set up new models of mathematical pixel transformation which served as a basis for new computer graphics. By using new computer models and the PostScript programming language new possibilities in computer graphics were created and applied in RIP printing systems. He has participated in the development of many new procedures in printed matter protection. In the security field of graphic technology he processed and created new grating methods. Algorithms that enable the joining of a grating element to every image element individually were proposed. Deformations of grating elements from low to maximum opacity were developed. In this way, completely new functions of growth of grating elements were set up. New hybrid grating methods based on basic amplitudinally modulated method were created, with stochastic change of angle, lines and form of the grating element. He is the initiator of the project and scientific research of standards and creating digital scales of norms and communication dictionaries in the processes of publishing, graphic preparation, printing processes and processes of graphic finishing, integration of knowledge about norms and standards in graphic industry from different sources into a unique way of description in the form of an XML-document. He is involved in the research of workflows in graphic production and the creation of digital workflow bases, as well as the processes of continuous automatic production, operation processing and operation monitoring, and the optimisation of the process of graphic reproduction using the digital workflow base. His research includes setting up new methods in printing that use the infrared part of the electromagnetic spectrum with the possibility of creating a double image and double information. Such research was recognized internationally, patents were filed and gold medals won around the world for innovation with real application.
Date of last academic appointment to the teaching and research position	12 April 2004, associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana; Žiljak-Vujić, Jana., Managing dual color properties with the Z-parameter in the visual and NIR spectrum. // Infrared physics & technology. 55 (2012) ; 326-336 2. Pavazza, Sandra; Pap, Klaudio, The Alternative Way of Creating Infographics Using SVG Technology. // Acta graphica. 23 (2012) ,1-2; 45-56 3. Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana., Development of a prototype for zrgb infraredesign device. //Technical Gazette.18 (2011) , 2; 153-159 4. Pap, Klaudio; Žiljak, Ivana; Žiljak-Vujić, Jana., Image Reproduction for Near Infrared Spectrum and the Infraredesign Theory. // The Journal of imaging science and technology. 54 (2010) , 1; 10502 -1-10502 -9 5. Žiljak, Vilko; Pap, Klaudio; Žiljak, Ivana., Infrared hidden CMYK graphics. // Imaging science journal. 58 (2010) , 1; 20-27 6. Barišić, Mario; Pap, Klaudio; Žiljak-Stanimirović, Ivana; Žiljak, Vilko. Double Image Design in Newspaper Production. // Acta graphica. 21 (2010) , 1-2; 27-33

	7. Žiljak, Vilko; Pap, Klaudio; Žiljak-Vujić, Jana; Žiljak-Stanimirović, Ivana. Color Management Expansion on Infrared Spectrum with the INFRAREDESIGN Theory. // Engineering Power. 9 (2010) , 1; 1-2 8. Žiljak, Vilko; Pap, Klaudio; Žiljak, Ivana.. CMYKIR security graphics separation in the infrared area. // Infrared Physics and Technology. 52 (2009) , 2-3; 62-69 9. Stanić-Loknar, Nikolina; Pap, Klaudio; Posavec, Dijana; Koren, Tajana., Mutational Typography in Security Printing. // Annual 2009 of the Croatian Academy of Engineering. 1 (2009) ; 119-132 10. Žiljak, Ivana; Pap, Klaudio; Žiljak, Vilko., Double Separation Method for Translation of the Infrared Information into a Visible Area. // Journal of Information and Organizational Sciences. 33 (2009) , 1; 219-225 11. Žiljak, Ivana; Pap, Klaudio; Žiljak-Vujić, Jana., Infrared design on textiles as product protection. // Tekstil. 58 (2009) , 6; 239-253 12. Žiljak, Ivana; Žiljak-Vujić, Jana; Pap, Klaudio., Design of Security Graphics with Infrared Colours. // International Circular of Graphic Education and Research. 2 (2009) ; 24-31 13. Žiljak, Vilko; Pap, Klaudio; Žiljak, Ivana; Žiljak-Vujić, Jana., Upravljanje informacijama u infracrvenom dijelu spektra. // Informatologia. 42 (2009) , 1; 1-9 14. Pap, Klaudio; Žiljak-Vujić, Jana; Žiljak, Ivana; Agić D. Screen Element Shape "R73" Mutation // DAAAM International Scientific Book 2009 / Katalinić, Branko (ur.). Beč : DAAAM International, 2009. Str. 763-770. 15. Plehati, Silvio; Pavlović, Tomislav; Bogović, Tomislav; Pap, Klaudio; Žiljak-Vujić, Jana. FMEA Analysis of Xeikon Electrophotographics // DAAAM International Scientific Book 2009 / Beč : DAAAM International, 2009. Str. 977-984. 16. Žiljak, Ivana; Pap, Klaudio; Žiljak-Vujić, Jana. The print of the double picture and INFRAREDESIGN in the space of the security graphics // Advances in Printing and Media Technology / Nils, Enlund ; Lovreček, Mladen (ur.). Darmstadt, Germany : IARIGAI, 2009. Str. 445-448. 17. Žiljak, Vilko; Pap, Klaudio; Žiljak-Vujić, Jana; Žiljak, Ivana., Infraredesign ili CMYKIR separacija // Inovacijska kultura i tehnologijski razvoj / Božičević, Juraj (ur.). Zagreb : Hrvatsko društvo za sustave, 2009. Str. 169-174 18. Žiljak, Vilko; Pap, Klaudio; Žiljak-Vujić, Jana; Lajkovič, Josipa. Modeling and Simulation as The Basis for Hybridity in The Graphic Discipline Learning/Teaching Area. // Acta graphica. 20 (2009) , 1-4; 31-41 19. Pogarčić, Ivan; Pap, Klaudio; Žiljak, Ivana, eLearning as an information system // The 2nd International Multi-Conference on Engineering and Technological Innovation: IMETI 2009, Proceedings, Volume I / Nagib Callaos, Hsing-Wei Chu, Yaroslava Yingling, C.Dale Zinn (ur.). Orlando, 2009. 207-211 20. Pap, Klaudio; Žiljak, Ivana; Žiljak-Vujić, Jana., Process color management for producing double images. // Annual 2008 of the Croatian Academy of Engineering. 1 (2008) ; 395-410 21. Pap, Klaudio; Žiljak, Vilko; Žiljak, Ivana., Research of New Graphic Production Planning Methods with SVG technology. // International Circular of Graphic Education and Research Journal. 1 (2008) ; 40-47 22. Žiljak, Vilko; Pap, Klaudio; Žiljak-Vujić, Jana. Workflows Simulation Models as Tools for e-Learning of Graphic Production. // International Circular of Graphic Education and Research Journal. 1 (2008) ; 51-56 23. Žiljak-Vujić, Jana; Pap, Klaudio; Žiljak, Ivana, Design with mutant modulation screen elements. // International Circular of Graphic Education and Research. 1 (2008) ; 22-28 24. Žiljak, Ivana; Žiljak-Vujić, Jana; Pap, Klaudio. Colour control with dual separation for Daylight and Daylight / Infrared light // Advances in Printing and Media Technology / Enlund, Nils ; Lovreček, Mladen (ur.). Darmstadt, Germany : 2008. Str. 273-278 25. Mandić, Lidija; Majnarić, Igor; Agić, Darko; Pap, Klaudio; Stanić, Nikolina. The Quality of Digital Print // Proceedings of the Design 2008 Workshop Design of Graphic Media / Žiljak, Vilko (ur.)., Dubrovnik, 2008

	26. Pap, Klaudio; Pavlović, Tomislav; Sabati, Zvonimir; Barišić, Mario; Koren, Antun. Digital Workflow System in Graphic Production // Proceedings of the Design 2008 Workshop Design of Graphic Media / Žiljak, Vilko (ur.). Zagreb : University of Zagreb, Faculty of Graphic Arts, 2008. 1459-1463 27. Pap, Klaudio; Pogarčić, Ivan; Sabati, Zvonimir, Research of Methods for Production Management and Making Reports through Digital Job Orders // Proceedings of the 19th Central European Conference on Information and Intelling Systems / Varaždin :2008. 485-489 28. Pap, Klaudio; Žiljak-Vujić, Jana; Žiljak, Ivana, Screen element shape "R73" mutation with method of growth function parameterization // Proceedings of the 19th International DAAAM Symposium "Intelligent Manufacturing & Automation : "Focus on Next Generation of Intelligent Systems and Solutions", Vienna:DAAAM International, 2008 29. Plehati, Silvio; Pavlović, Tomislav; Bogović, Tomislav; Pap, Klaudio. Fmea analysis of Xeikon electrophotographics // Proceedings, 19th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Next Generation of Intelligent Systems and Solutions", Vienna, 2008. 30. Pogarčić, Ivan; Frančić, Miro; Pap, Klaudio, Application of AHP Method in Development of Information Systems // Proceedings of the 19th CECIIS, 2008 / Varaždin : FOI Varaždin, University of Zagreb, 2008. 593-600 31. Sabati, Zvonimir; Pap, Klaudio; Žiljak, Ivana; Tomiša, Mario., E-learning of Extreme Production Procedures // Proceedings of the 19th Central European Conference on Information and Intelling Systems, Varaždin : Faculty of Organization and Informatics, 2008. 255-258 32. Žiljak, Ivana; Pap, Klaudio; Žiljak, Vilko, Translation of the Infrared into a Visible Area with Double Separation // Proceedings of the 19th Central European Conference on Information and Intelling Systems, Varaždin : Faculty of Organization and Informatics, 2008. 397-400 33. Žiljak, Ivana; Pap, Klaudio; Žiljak-Vujić, Jana; Bogović, Tomislav; Plehati, Silvio. Pseudo color in Infrared Design // Proceedings of the Design 2008 Workshop Design of Graphic Media, Zagreb : University of Zagreb, Faculty of Graphic Arts, 2008. 1497-1501 34. Žiljak-Vujić, Jana; Pap, Klaudio; Plehati, Silvio; Žiljak, Ivana; Kropar-Vančina, Vesna, Parametar modified screen element " Mutant r70" in security graphic // Proceedings of the Design 2008 Workshop Design of Graphic Media, Zagreb : University of Zagreb, Faculty of Graphic Arts, 2008. 1491-1495
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1. **Researcher** on scientific-research project, DIGITAL SYSTEMS IN PRINTING industry, Project code: 128009 Principal researcher: Vilko Žiljak, Faculty of Graphic Arts, Zagreb 2002-2012 2. **Project leader** of, IMPROVING WORKFLOWS IN GRAPHIC REPRODUCTION PROCESSES, 128-1281957-1956, Principal researcher: Klaudio Pap, 2007-2012 3. **Researcher** on scientific-research project, CROATIAN WORD HERITAGE AND CROATIAN EUROPEAN IDENTITY RJEČNIČKA BAŠTINA I HRVATSKI EUROPSKI IDENTITET, Project code: 130-1301679-1380, Principal researcher: Damir Boras, Faculty of Humanities and Social Sciences, Zagreb 2007-ongoing 4. **Project leader** of technological developmental research project, SOFTWARE TOOLS FOR PROGRAMMED GRAPHIC TECHNOLOGY LEARNING, Project code: TP-07/0128-10, Faculty of Graphic Arts, Zagreb Project duration: 20 months, 2007-2008
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1.Koren Tajana, Development of stenography in typography with stochastic distribution of infrared colours: doctoral dissertation, **supervisor**: Klaudio Pap, Zagreb: Faculty of Graphic Arts, 2010. 2.Stanić Loknar, Nikolina, Stochastic typography in security graphics: doctoral dissertation, **supervisor**: Klaudio Pap, Zagreb: Faculty of Graphic Arts, 2010.

Table 1. Detailed list of teaching staff

Name	*MIROSLAV GOJO*
Short CV	**1.** Miroslav Gojo, PhD, full professor, was born in Tuzla on 13 August 1950. He finished elementary school and high school in Tuzla as well. After graduating from high school in 1969, he enrolled in the Faculty of Technology at the University of Zagreb, from which he graduated in 1976 and earned his Master's degree in 1979. He defended his doctoral thesis at the Faculty of Science and Technology at the University of Ljubljana in 1995. **2.** During his university studies he was an assistant at the Analytical and Physical Chemistry Departments for a number of years, and after graduating he was appointed assisstant at the Physical Chemistry Department at the Faculty of Technology , University of Zagreb on a fixed-term contract. After earning his Master's degree he was appointed research assistant. In 1980, he started working for RIZ – Tvornica poluvodiča (semiconductor factory) in Zagreb as a researcher in the development of chips. He worked in RIZ until 1990, when he was appointed senior assistant in the Printing Forms course at the Faculty of Graphic Arts in Zagreb. After he defended his doctoral thesis, he was appointed assistant professor in 1998, associate professor in 2002 and full professor of technical science, field of graphic technology, for the Printing Forms course group, in 2006. In September 2011 he was appointed full professor with tenure in 2011. He has been teaching the undergraduate, graduate and postgraduate programme at the Faculty of Graphic Arts. In 2010 he was appointed visiting professor at the Faculty of Technical Sciences, University of Novi Sad. He has published several scientific papers in domestic and international journals and participated in a number of scientific symposiums in Croatia and abroad. He also edited several proceedings and was a member of organizing committees at different scientific symposiums. Miroslav Gojo, PhD, full professor, managed the following scientific projects: - "Development of measurement methods of printing form surfaces" code. 128-1201785-2228, Ministry of science of the Republic of Croatia (2007), - *"Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing* ", Bilateral project Croatia-Slovenia, Ministry of science of the Republic of Croatia (2010). He participated in the realization of several other domestic and international scientific projects. He is a member of several domestic and international scientific and professional associations: International Society of Electrochemistry (member), DAAAM International, Croatian Academy of Engineering (associate member), Croatian Chemical Society (member), Croatian Society of Chemical Engineers and Technologists Zagreb (member of the Presidency of the electrochemical section, now member), MIDEM Society for Microelectronics, Electronic Components and Materials, Ljubljana (secretary, now member) Croatian society for materials protection (member), The society of university teachers, scholars and other scientists Zagreb (President of the Supervisory Board), AMACIZ, Society of Engineers of Chemical Technological Study Zagreb (member) Scientific Field Committee for the area of technical sciences – the field of chemical engineering, mining, petroleum and geological engineering, metallurgy, textile technology and graphic technology (member from 2009 to 2013).
Date of last academic appointment to the teaching and research position	13 September 2011, full professor with tenure
List of published papers which	**1.3 Paper or chapter in a book**

qualify him/her for programme delivery and that are relevant to the doctoral programme	1. T. Cigula, S. Mahović Poljaček, **M. Gojo,** *"The Significance of Exposition and Developing Oscilations in CtP andConventional Plate Making Processes"*, in: "DAAAM International Scientific Book 2008", Chapter 20, (ed. B. Katalinić), Vienna, Austria, (2008), 229-238. 2. **M. Gojo,** S. Dedijer, D. Novaković, S. Mahović Poljaček, *"Influence of the Microsurface Offset Printing Plates on the Machine Printing Process"*, in "Machine Design 2009", (ed. S. Kuzmanović), Novi Sad, Serbia, (2009), 415-420. 3. D. Novaković, I. Karlović, T. Cigula, **M. Gojo,** *"Offset Plate Surface Roughness in the Function of Print Quality"*, in "Machine Design 2009", (ed. S. Kuzmanović), Novi Sad, Serbia, (2009), 439-444. 4. T. Cigula, S. Mahović Poljaček, **M. Gojo,** *"Influence of the Printing Process on the Quality of AgX Printing Plates"*, in: "DAAAM International Scientific Book 2009", (ed. B. Katalinić), Vienna, Austria, (2009), 897-906 5. T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Influence of Drop Volume on Time-dependant Contact Angle",* in: "DAAAM International Scientific Book 2010", (ed: B. Katalinić), Vienna, Austria, (2010), 195-202. 6. D. Novaković, S. Dedijer, **M. Gojo**, S. Mahović Poljaček, *"Analsys of Surface Roughness Factors of Solid Printing Areas on Flexo Printing Plates"*, In "Machine Design 2010", (ed. S. Kuzmanović), Novi Sad, Serbia, (2010), 319-324. 7. T. Cigula, **M. Gojo,** D. Novaković, Ž. Pavlović,*"Influence of Various Concentrates on Quality of Printing Plates' Wetting Process"*, in "Machine Design 2010", (ed. S. Kuzmanović), Novi Sad, Serbia, (2010), 325-330. **1.4. Scientific paper published in a journal cited in tertiary publications** 1. **M. Gojo,** V.D. Stanković, S. Mahović Poljaček *"Electrochemical Deposition of Gold in Citrate Solution Containing Thallium"*, Acta Chim. Slov., 55 (2) (2008), 330-337. 2. S. Mahović Poljaček, D. Risović, K. Furić, **M. Gojo,** *"Comparison of fractal and profilometric methods for surface topography characterization"*, App. Surf. Sc, Vol. 254(11) (2008), 3449-3458. 3. D. Risović, S. Mahović Poljaček, K. Furić, **M. Gojo,** *"Inferring fractal dimension of rough/porous surfaces - a comparison of SEM image analysis and electrochemical impedance spectroscopy methods"*, App. Surf. Vol. 255 (2008), 3063-3070. 4. D. Risović, S. Mahović Poljaček, **M. Gojo,** *"On correlation between fractal dimension, profilometric parameters in characterization of surface topographies"*, App. Surf. 255, (2009), 4283-4288. 5. S. Mahovic Poljacek, D. Risovic, T. Cigula, M. Gojo, *"Application of electrochemical impedance spectroscopy in characterization of structural changes of printing plates",* Journal of Solid State Electrochemistry, 16, 3,(2012), 1077-1089. 6. T. Cigula, R. Fuchs Godec, M. Gojo, M Slemnik, *"Electrochemical Impedance Spectroscopy as a Tool in the Plate Making Process Optimization",* Acta Chim. Slov., 53 (3) (2012), 513-519. **1.5. Scientific paper published in a journal cited in secondary publications** 1. S. Mahović Poljaček, T. Cigula, **M. Gojo**, *"Formation and Defining the Different Aluminium Oxide Microstructures in Alkaline Solutions"*, Int. J. Mater. Form, 1, (2008), 463-466. 2. T. Cigula, S. Mahović Poljaček, **M. Gojo,** *"Influence of the Print Run on Silver Hali*

Printing Plates", Journal of Graphic Engineering and Design 1, (2010), 39-44.

1.6. Scientific papers, reviewed and published in international conference

1. S. Miloš, T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Contribution to the Printing Ink - Printing Plate – Run Lenght Interactions"*, Proceedings, MATRIB 2008., (ed. K. Grilec, G. Marić, S. Jakovljević), Vela Luka, (2008), 205-210.
2. T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Analysis of the Silver Halide Printing Plates after Printing Process"*, Proceedings, 19th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Next Generation of Intelligent Systems and Solutions", (ed. B. Katalinić), Trnava, (2008), 0251-0252.
3. T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Changes of the Surface Characteristics in the Plate Making Process"*, Proceedings, GRID '08, (ed. D. Novaković), Novi Sad, (2008), 53-58.
4. T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Defining the Properties of Fountain Solution Dependind on Type of Surface Active Substavce"*, Proceedings, MATRIB 2009., (ed. K. Grilec, G. Marić,), Vela Luka, (2009), 16-20.
5. D. Novaković, I. Karlović, **M. Gojo**, *"Influence of the Surface Characteristics on Quality of the Offset Printing Plate"*, Proceedings, MATRIB 2009., (ed. K. Grilec, G. Marić,), Vela Luka, (2009), 142-148.
6. M.Baračić, T Cigula, T. Tomašegović, P. Y. Žitinski Elias, **M.Gojo,** *"Influence of Plate Making Process and Developing Solutions on the Nonprinting Areas of Offset Printing Plates"*, Proceedings, 20th International DAAAM Symposium: "Intelligent Manufacturing & Automation: Theory, Practice & Education", (ed. B. Katalinić), Vienna, (2009), 0599-0600,
7. T. Cigula, S.Mahović Poljaček, **M. Gojo,** *"Defining of Time-Dependent Contact Angle of Liquids on the Printing Plate Surfaces"*, Proceedings, 20th International DAAAM Symposium: "Intelligent Manufacturing & Automation: Theory, Practice & Education", (ed. B. Katalinić), Vienna, (2009), 0627-0628, 0627-0628,
8. **M. Gojo,** Ž. Pavlović, D. Novaković, *"Analysing of the Surface Roughness of non Printng Elements on CtP Thermal Offset Plates"*, Proceedings, 11th International Design Conference, (ed. V. Žiljak, D. Milčić), Zagreb, (2010), 1941-1946.
9. T. Cigula, S. Mahović Poljaček, **M. Gojo**, D. Novaković, *"Roughness of nonprinting surfaces of the offset printing plate depending on processing solution concentration"*, Proceedings, MATRIB 2010., (ed. Z Schauperl, M. Šnajder), Vela Luka, (2010), 44-50.
10. T. Cigula, S. Mahović Poljaček, N. Pintar, **M. Gojo,** *"Quality of the Printing Plates as a Function of Chemical Processing"*, Proceedings, 21st International DAAAM Symposium: "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions", (ed. B. Katalinić), Vienna, (2010), 0495-0496,
12. **M. Gojo,** S. Mahović Poljaček, T. Cigula, *"Nonprinting Areas on the Offset printing plates What we knoww-what we should knoww"*, Proceedings,5th International Symposium Grid '10, (ed. D. Novaković,). Novi Sad, (2010), 9-18, (plenary lecture).
13. T. Cigula, Ž. Pavlović, **M. Gojo**, D. Risović, *"Wetting of Offset Plate's Non-Printing Areas as a Function of Print Run"*, Proceedings,5th International Symposium Grid '10, (ed. D. Novaković,). Novi Sad, (2010), 211-218.
14. T. Tomašegović, T. Cigula, S. Mahović Poljaček, **M. Gojo,** *"Effect of Exposures on the Mechanical Properties of the Liquid Photopolymer Flexographic Printing Plate "*, Proceedings, MATRIB 2011., (ed. Z Schauperl, S. Šolić,), Vela Luka, (2011), 495-501.

	15. T. Tomašegović, T. Cigula, S. Mahović Poljaček **M. Gojo,** *"Wetting of CtP offset plate as a function of developing process"*, Proceedings, 22nd International DAAAM Symposium: "Intelligent Manufacturing & Automation: Power of Knowledge and Creativity", (ed. B. Katalinić), Vienna, (2011), 0019-0020. 1.6.38. T. Tomašegović, T. Cigula, S. Mahović Poljaček, **M. Gojo**, ***"Comparison of different measuring systems for printing plate´s coverage values evaluation*** ", Printing future days proceedings 2011 (ed. R. R. Baumann,). Chemnitz, (2011), 39-44. 16. S. Dedijer, T. Cigula, D. Novaković, **M. Gojo**, , *"The contact angle of reference liquids on flexographic printing plates as a function of time* ", Proceedings, 6th International Symposium Grid '12, (ed. D. Novaković,). Novi Sad, (2012), 121-128 **1.7. Scientific papers, reviewed and published in proceedings from domestic scientific symposiums** 1. G. Golob, B. Zajc, **M. Gojo**, *"Usporedba kemijskih parametara otopina za vlaženje u ofsetnom tisku"*, Proceedings, GRID '08 ", (ed. D. Novaković), Novi Sad, (2008), 33-39. 2. R. Fuchs – Godec, M. Slemnik, **M. Gojo**, T. Cigula, *" Elektrokemijske raziskave aluminija in njegovih oksidov, Korozijska odpornost ter njihova uporaba v procesu offset tiskanja"*, Zbornik referatov, Slovenski kemijski dnevi 2011., (ed. Z. Kravanja, D. Brodnjak-Vončina, M. Bogataj), Portorož, (2011), CD 1-8.
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1. Method development for mesuaring area of a printing forms no. 128-1201785-2228), Ministry of science education and sport, Croatia (2007-) 2. *"Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing"* Bilateral project Croatia-Slovenia, Ministry of science, education and sports of the Republic of Croatia, (2010) 3. Digitalization of museum painting heritage code. 128-1281957-1958, Ministry of science, education and sport, Croatia (2007-)
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1. Sanja Mahović, *"Characterisation of surface structures of offset printing forms"* Doctoral dissertation, Faculty of Graphic Arts, Zagreb, 2007. 2. Tomislav Cigula, *"Qualitative analysis of available surfaces of printing forms"* Doctoral dissertation, Faculty of Graphic Arts, Zagreb, 2011. 3. Živko Pavlović, *"Characterisation of surface structure of nonprinting elements of CtP thermal printing form for offset printing",* Doctoral dissertation, Fakultet tehničkih nauka Univerzitet u Novom Sadu, 2012.

Table 1. Detailed list of teaching staff	
Name	**Marica Ivanković, PhD, full professor**
Short CV	She graduated in 1985 and earned her Master's degree in 1988 from the Faculty of Technology, University of Zagreb. She received her PhD in 1994 at the Faculty of Chemical Engineering and Technology (FKIT) in Zagreb with the thesis « Curing kinetics and chemorheology of thermoset matrices for composites» . From 1991 to 1993 she stayed at the Università degli Studi di Napoli, Naples, Italy. In 1995 she was appointed assistant professor at FKIT, associate professor in 2000, full professor in 2005 and full professor with tenure in 2010, in the discipline of technical sciences, field: chemical engineering and other basic technical sciences, branch: materials. In the FKIT doctoral program „Engineering Chemistry" she was assigned to teach the Physical and Chemical Principles in Polymeric Systems (from 2004 to date) and Composite Materials (from 2004 to date). She has taught the

	course „Polymeric Materials“ in the doctoral program „Graphic Engineering and Graphic Design“ of the Faculty of Graphic Arts, University of Zagreb. Her scientific interests include hydrodynamic and thermodynamic properties of polymeric solutions, kinetics of polymerization reactions, chemorheology of duroplasts and duroplast composites, interpenetrated polymeric nets, organic-anorganic hybrides and polymeric nanocomposites. She has published 60 scientific papers, 25 of which were referred to in international databases. (SCI: 391 citation, h-index: 11).).
Date of last academic appointment to the teaching and research position	21 December 2010
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	1.I. Brnardić, J. Macan, H. Ivanković, M. Ivanković*, Thermal degradation kinetics of epoxy / organically modified montmorillonite nanocomposites. J.Appl.Polym.Sci. 107 (2008) 1932-1938. 2. I. Brnardić, I M. Huskić, M. Žigon, M. Ivanković*, Montmorillonite Modified with Liquid Crystalline Diol Hydrochlorides: Preparation and Characterization, J. Non-Cryst. Solid. 354 (2008) 1986-1991. 3. M. Huskić, I. Brnardić, M.Žigon, M. Ivanković, Modification of Montmorillonite by Quaternary Polyesters, J. Non-Cryst. Solid. 354 (2008). 4. H. Ivanković, G. Gallego Ferrer, E. Tkalčec, S. Orlić and M. Ivanković, Preparation of highly porous hydroxyapatite from cuttlefish bone , J. Mater. Sci. Mater. Med. 20 (2009) 1039-1046. 5. M. Huskić, E. Žagar, M. Žigon, I. Brnardić, J. Macan, M. Ivanković, Modification of montmorillonite by cationic polyesters, Appl. Clay Sci. 43 (2009) 420-424. 6. M. Ivanković*, I. Brnardić, H. Ivanković, M. Huskić, A. Gajović: Preparation and properties of organic-inorganic hybrids based on poly(methyl methacrylate) and sol-gel polymerized 3-glycidyloxypropyltrimethoxysilane, Polymer 50(12) (2009) 2544-2550. 7. F. Teyssandier, M. Ivanković, B.J. Love, Modelling the effect of cure conversion on dynamic viscosity of epoxy resin cured by an anhydride curing agent, J. Appl. Polym. Sci. 115 (2010) 1671-1674.
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	„Bioceramic, polymer and composit nanostructural materials“ (2007-today) „Preparation of nonocomposits from polimers and layered silicate modificated with poliions“ (2007-2008) croatian-slovenian project, project leader
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1 (Ivan Brnardić, PhD, FKIT)

Table 1. Detailed list of teaching staff

Name	**Jasenka Jelenčić, PhD, full professor**
Short CV	Jasenka Jelenčić, PhD, full professor with tenure, has worked at the Department of Polymer Engineering and Organic Chemical Technology the Faculty of Chemical Engineering and Technology since 1971. She earned her doctoral degree in 1975, her Master's degree in 1971 and graduated in 1969 at the same faculty. Her scientific and teaching work includes the following fields: polymers and their synthesis, polymeric materials, polymer blends, nanocomposites, degradation, stabilization and modification of polymeric materials. She is particularly interested in chemical and mechanical methods of recycling for the purposes of polymeric materials for new products and the protection of the environment. She managed several projects, and she is currently the leader of the project of the Ministry of science, education and sports (MZOS), The development of innovative multifunctional polymer blends. She has reviewed articles for many domestic and international scientific journals, national projects of MZOS, scientific projects of the Republic of Slovenia and undergraduate and graduate programs of the National Council for Higher Education of MZOS. She has supervised more than a

	hundred graduate theses, ten Master's theses and several doctoral theses. She is the author of one book chapter, 38 scientific articles published in international journals cited in CC, SCI and SCI-expanded databases, 25 articles in other journals, 12 scientific articles in proceedings from international scientific symposiums, and she held 8 guest lectures. She has participated in 44 international and 62 domestic congresses. She has published 6 professional papers in domestic journals and 7 professional papers in proceedings from domestic professional conventions.
Date of last academic appointment to the teaching and research position	16 September 1997, full professor with tenure
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	I. A. Ptiček Siročić, Z. Hrnjak-Murgić, J. Jelenčić The Surface Energy as an Indicator of Miscibility of SAN/EPDM Polymer Blends, Journal of Adhesion Science and Technology,/prihvaćen/ 2013. 2.A.Ptiček Siročić, Z. Hrnjak-Murgić, J.Jelenčić, Evaluation of Compatibility in SAN/EPDM Blends by Determination of the Adhesion Parameters, Journal of Adhesion Science and Technology, DOI.10.1080/01694243.2012.748432 3.Lj. Kratofil Krehula, A. Ptiček Siročić, Z. Katančić, J. Jelenčić, V. Kovačević, Z Hrnjak.Murgić, Influence of Calcium Carbonate Filler and Mixing Type Process on Structure and Properties of Styrene-Acrylonitrile/Ethylene-Propylene-Diene Polymer Blends, Journal of Applied Polymer Science, 126(4) (2012) 1257-1266 4.D. Vrsaljko. S. Lučić Blagojević, M. Leskovac, Lj. Kratofil Krehula, A. Ptiček Siročić, Z. Katančić, V. Kovačević, J. Jelenčić, Effect of Preparation on Morphology-Properties Relationships in SAN/EPDM/PCC Composites, Journal of Composite Materials, 45 (13) (2011) 1381-1393. 5. A.Ptiček Siročić, Z. Hrnjak.Murgić, J. Jelenčić, Effect of the Filler and the Compatibilizer on the Properties of Filled Blends, Composite Interfaces, 16 (2009) 85-95 6.A.Ptiček Siročić, Z. Hrnjak.Murgić, J.Jelenčić Effect of Compatibilizer on Morpfology and Mechanical Properties of SAN/EPDM Blends, Internat. Polym. Proc. 23(4) (2008) 356-362
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1. International project: Application of Coated PCC Nanofiller in Immsicible SAN/EPDM Blend, 2003-2007. FKIT i Solvay, Njemačka coordinator Vera Kovačević PhD, Zlata Hrnjak-Murgić 2. Internal science project: Development of a innovative multifunctional polimer admixture, 2007. – MZOS, respository Jasenka Jelenčić PhD 3. Internal science project: Research, development and asessment of polymer composites for engineering appliance, 2007. –MZOS, respository Zlata Hrnjak-Murgić PhD 4. Internal science project: Modification of area in multifunctional polimer systems, 2007. – MZOS, respository Jasenka Jelenčić PhD
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1.Hrnjak-Murgić Zlata, Characterisation of structural net ethylene-prophylene-diene caoutchouc by methods of constraining-stretching and by balanced swelling , Zagreb, FKIT, 28 February 1996 2.Kratofil Krehula, Ljerka Recycling and modifying of poly(ethylene-teraphtlate) by reactive extrusion, Zagreb, FKI, 5 July 2010
Table 1. Detailed list of teaching staff	
Name	Vinko Barić, PhD
Short CV	Professor Vinko Barić, PhD, was born in 1950 in Suhopolje, Virovitica-Podravina County, Republic of Croatia. He is a Croatian national. He finished elementary school in 1965, and high school in 1969. He graduated from the Faculty of Foreign Trade in Zagreb in 1973, earned his Master's degree in economic science in 1981, and his doctoral degree in 1991. He gained work experience in higher education

	for a number of years, through positions from assistant to full professor. The scientific and professional activities of Professor Vinko Barić, PhD, is corroborated by numerous papers published in domestic and international scientific and professional journals.
Date of last academic appointment to the teaching and research position	full professor with tenure, December 16, 2008.
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	V.Barić - M.Jeleč Raguž; Hrvatska na putu prema društvu znanja, Poslovna izvrsnost, IV/2010, Zagreb, 2010 V.Barić - Š.Smolić, Strategija ljudskih resursa u hrvatskom zdravstvu - izazovi ulaska Hrvatske u Europsku uniju, HAZU i Ekonomski fakultet Sveučilišta u Zagrebu, zbornik radova, Zagreb, 2012. V.Barić, Zaposlenost u poljoprivredi Bjelovarsko - bilogorske županije: stanje i perspektive, HAZU - Zavod za znanstveno - istraživački rad u Bjelovaru,svezak 6, Zagreb - Bjelovar, 2012. V.Barić - A.Obadić, Odnosi javnih i privatnih ekonomskih učilišta - svjetski trendovi i praksa u Hrvatskoj, zbornik radova znanstvene konferencije "Ekonomsko obrazovanje u Republici Hrvatskoj - jučer, danas, sutra, Ekonomski fakultet Sveučilišta u Zagrebu, Zagreb, 2013.
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1. „ Analysis of a economic growth effectiveness.“, project leader: Professor Ivo Družić PhD, project MZOS 2. „ Economics ageing in Croatia – longitudinal research.“ Project leader Professor Anđelko Akrap PhD, Development fund project University of Zagreb.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	

Table 1. Detailed list of teaching staff

Name	***Dubravko Banić***
Short CV	Dubravko Banić graduated in 1993 from the engineering study program at the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb. The subject of his graduate thesis was: Analysis and construction of mixers, and it was supervised by Vladimir Koharić, PhD, full professor. He defended his doctoral dissertation (topic: Exploring the situation while maintaining printing rotations; supervised by V. Salamon, PhD, full professor) at the Faculty of Graphic Arts in Zagreb in 2006, and earned a PhD degree in the area of technical sciences, field graphic technology. Since 1994, he has worked at the Faculty of Graphic Arts, University of Zagreb, as an expert associate at the Department of Graphic Machines. He was appointed senior assistant in 2006, and assistant professor since 2009. He was course director for six courses: Graphic machines 1, Graphic machines 2, Automatics and maintenance of graphic machines, Re-engineering in graphic production, Optimization of parameters in the construction of graphic machines and Visualization in modeling graphic products. He participated in the following scientific project: “A study of features and formulations of digital printing paper“ project leader Stanislav Bolanča, PhD. Since 2007, he has participated in the following scientific project:“ Standardization of ecologically acceptable processes of graphic communications ”, project leader Diana Milčić, PhD. Within the area of graphic technology, he is primarily involved in research regarding the determining of the situation and proposing models for improvement of maintenance in graphic facilities, mechanisms in graphic machine constructions and the analysis of machine parameters that affect the quality of the final graphic product.

	He is the author of about 30 scientific and professional papers.
Date of last academic appointment to the teaching and research position	16 November 2009
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	H. Wolf , D. Banić, A. Sušić, Influence of small harmonic terms on eigen values of monodromy matrix of piece wise-linear oscillators, Meccanica, (2008), 469-566, ISSN: 0025-6455, (CC, SCI-EXPANDED) M. Brozovic, J. Pibernik, D. Banić, Quality of Color Lightness Reproductions, Journal of Imaging Science andTechnology, (2008), 52(6): 060507-1-8, ISSN:1062-3701 ,(CC) D. Donevski, D. Milčić, D. Banić, Model for Implementing TQM in the Graphic Arts Industry, Tehnički vjesnik. 16, (2009), 31-34, ISSN: 1330-3651 (SCI Expanded, INSPEC, SCOPUS) D. Katović, S. Bischof Vukušić, S. FlinčecGrgac,B. Lozo, D. Banić, Flame Retardancy of Paper Obtained with Environmentally Friendly Agents, Fibers&textiles in Eastern Europe, 17 (2009), 90-94, ISSN: 1230-3666 (CC)
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Project: 128-1281955-1951 Standardization of ecologically acceptable processes of graphic communications. Project leader: Professor Diana Milčić PhD.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	

Table 1. Detailed list of teaching staff	
Name	***Klementina Možina***
Short CV	Klementina Možina was born on 11 June 1971, in Ljubljana. She attended elementary and high school in Ljubljana. After graduating from high school she enrolled in the Faculty of Graphic Arts in Zagreb, from which she graduated in 1993. In 1994 she enrolled in the Master's programme at the Faculty of Arts in Ljubljana, and received her Master's degree in 1997. Two years later she enrolled in the doctoral program at the same faculty. During the preparation of her doctoral dissertation in 2000, she studied in England for three months at the University of Reading, Department of Typography and Graphic Communication. She defended the dissertation titled *Zgodovinski razvoj knjižne tipografije* in 2001. In 2004 she was appointed assistant professor. After she graduated from university she worked at the Mladinska knjiga printing house for 5 years (until 1998); first as a technologist, then as a project leader, and as the manager of the department of production planning for the final three years. Since 1998 she has worked at the Faculty of Natural Sciences and Engineering, Chair of Information and Graphic Technology. As associate professor, she teaches the following courses: Tipografija, Tipografija v različnih medijih, Tipografski elementi, Tipografsko načrtovanje, Teorija tipografije. From 2005 to 2006 she also taught the courses Vodenje grafične proizvodnje and Grafični inženiring.
Date of last academic appointment to the teaching and research position	Associate professor; October 25, 2012
List of published papers which qualify him/her for programme delivery and that	MOŽINA, Klementina. *Mikrotipografija*. Ljubljana: Naravoslovnotehniška fakulteta, Oddelek za tekstilstvo, 2009. 275 str., ilustr. ISBN 978-961-6045-65-0. [COBISS.SI-ID 245149696]

are relevant to the doctoral programm	MOŽINA, Klementina, MOŽINA, Klemen, BRAČKO, Sabina. Non-invasive methods for characterisation of printed cultural heritage. *J. cult. herit.*, 2013, vol. 14, [No.] 1, str. 8-15, ilustr., doi: 10.1016/j.culher.2012.02.012. [COBISS.SI-ID 2719600] BLAZNIK, Barbara, MOŽINA, Klementina, BRAČKO, Sabina. Stability of ink-jet prints under influence of light. *Nordic Pulp and Paper Research Journal*, 2013, vol. 28, no. 1, str. 111-118. [COBISS.SI-ID 2864752] VILAR, Andrej, MOŽINA, Klementina, PAVKO-ČUDEN, Alenka. Tipografija in logotipi v pletenih strukturah = Typography and logos in knitted structures. *Tekstilec*, 2013, letn. 56, št. 1, str. 34-46, ilustr. [COBISS.SI-ID 2860144] MOŽINA, Klementina, ZIDAR, Miša, HORVAT, Marija. Typography and graphic design in newspaper Slovenec. *Papiripar*, 2012, letn. 56, št. 4, str. 20-24, ilustr. [COBISS.SI-ID 2870128] MOŽINA, Klementina. Reprints of Jože Plečnik's fairytales Makalonca. *Acta graph.*. [Print ed.], 2011, [vol.] 22, [št.] 3/4, str. 85-92, ilustr. http://www.actagraphica.hr/index.php/actagraphica/article/view/19. [COBISS.SI-ID 2753136] RAT, Blaž, MOŽINA, Klementina, BRAČKO, Sabina, PODLESEK, Anja. Influence of temperature and humidity on typographic and colorimetric properties of ink jet prints. *J. imaging sci. technol.*, Sep./Oct. 2011, vol. 55, no. 5, str. 050607/1-050607/8, ilustr. [COBISS.SI-ID 2677104] RAT, Blaž, MAJNARIĆ, Igor, MOŽINA, Klementina. Visibility of care labelling code symbols = [Vidljivost simbola za njegu tekstila = Suchtbarkeit der Pflegekennzeichnungssymbole]. *Tekstil*, 2011, vol. 60, no. 6, str. 5251-257. [COBISS.SI-ID 2684784] MOŽINA, Klementina. Mikrotipografija arhitekta Jožeta Plečnika. V: VODOPIVEC, Ines (ur.). *Zgodovina knjige in bralne kulture na Slovenskem*, (Knjižnica, letn. 55 (2012), št. 4). Ljubljana: Zveza bibliotekarskih društev Slovenije: Narodna in univerzitetna knjižnica, 2011, dec. 2011, letn. 55, št. 4, str. 147-161, ilustr. http://revija-knjiznica.zbds-zveza.si/Izvodi/K1104/Mozina.pdf. [COBISS.SI-ID 2713200] MOŽINA, Klementina, URBANC, Tanja, RAT, Blaž, BRAČKO, Sabina. Influence of light on typographic and colorimetric properties of ink jet prints. *J. imaging sci. technol.*, Nov./Dec. 2010, vol. 54, no. 6, str. 060403/1-060403/8, ilustr. [COBISS.SI-ID 2510192 MOŽINA, Klementina. *Tipografski geslovnik - dopolnitve*. Ljubljana: Grafičar, 2008. http://www.graficar.si/tipografskigeslovnik_dopolnitve.htm. [COBISS.SI-ID 2107504]
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	L2-9278 Analysis of separately collected fractions of disposed packaging materials in Slovenia, possible applications and printability, 2007–2009
Number of successful supervision undertakings which resulted in completion of doctoral thesis	Dva: RAT, Blaž. *Digitalizacija tipografije Blaznikove tiskarne in njena uporabnost v različnih medijih : doktorska disertacija*. Ljubljana: [B. Rat], 2012. XV, 179 f., ilustr., graf. prikazi, tabele. [COBISS.SI-ID 261215488] BOLANČA-MIRKOVIĆ, Ivana. *Ecologically more friendly offset colours and print deinking mechanisms: doctoral dissertation*. Zagreb: [I. Bolanča Mirković], 2007. 182 f., ilustr. [COBISS.SI-ID 1988464]
Table 1. Detailed list of teaching staff	
Name	***Maja Brozović***
Short CV	Maja Brozović, PhD, was born on 20 May 1965 in Zagreb. She graduated from the School of Applied Arts in Zagreb, graphic technology program, in 1984. In 1987 she earned her degree from the Graphic Technology College in Zagreb, and in 1992 she graduated from the Combined program in graphic technology in Zagreb. After completing graduate studies, she took employment with FS, Llc, where she

	worked as a system engineer for information systems in the field of printing. Her duties also included the education of experts in graphic technology in companies in Croatia and Slovenia for the activities of application of Desktop Publishing system. In 1995 she was appointed expert associate in the course Visual Presentation at the Department of Art History and Graphic Design at the Faculty of Graphic Arts. She earned her Master's degree in information systems from the Faculty of Organization and Informatics in Varaždin, University of Zagreb, in 1996. The title of her master's thesis was *Modification of information in the process of transformation of originals into digital print reproductions*, supervised by Professor Vilko Žiljak, PhD. She received her doctoral degree in 2003, by defending the dissertation titled *A study of objective reproduction in printing,* supervised by Professor Stanislav Bolanča, PhD. On 15 March 2010 she was appointed associate professor, and on 17 June 2011 she was appointed research fellow. She is the course director in undergraduate, graduate and doctoral programs at the Faculty of Graphic Arts, University of Zagreb.
Date of last academic appointment to the teaching and research position	15 March 2010
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	**Brozović, M**.; Pibernik, J.; Banić, D.: The Quality of Color Lightness Reproduction, The Journal of Image Science and Technology **52**(2008)6, 1-8 (CC, SCI-Exp, IF=0.619) Mikota, M.; **Brozović, M**.; Pavlović, I.: Kvaliteta fotografske prezentacije modnih noviteta u medijima vanjskog oglašavanja, Tekstil **57**(2008)9, 457-464 (SCI-Exp, IF=0.137) Quality of the photo presentation of fashion novelties in the media of out-of-home advertising, Textil, **57**(2008)9, 457-464 (SCI-Exp, IF=0.137) Mikota, M.; Pavlović, I.; **Brozović, M**.: Influence of the Lighting on the Portrait Photographs Shot with the Digital Photography System, DAAAM International Scientific Book 2008, B. Katalinić (Ed.), pp. 463-476, DAAAM International Vienna, Vienna, (2008) (Inspec) Pibernik, J.; **Brozović, M.**; Dolić, J.: Challenging the Role of Graphic Design by Situating it in Larger Context, Proceedings of the 27th International Conference on Organizational Science Development, Portorož, Slovenia, (2008) Čauš, S.; **Brozović, M.**: Application of 3D Graphics in Graphic Design, Book of Proceeding of the 12th International Conference on Printing, Design and Graphic Communication Blaž Baromić, Split, Croatia, (2008) Pibernik, J.; **Brozović, M**.; Dolić, J.: Percepcija eko-tema u dizajnu modne odjeće za mlade, Tekstil **58**(2009)1-2, 1-10 (SCI-Exp, IF=0.171)

	Perception of eco-matters in designing fashion wear for the young, Textil **58**(2009)1-2, 1-10 (SCI-Exp, IF=0.171) **Brozović, M**.; Mikota, M.; Pavlović, I.: Steadfastness of Colours of Outdoor Advertising Media, DAAAM International Scientific Book 2010, B. Katalinić (Ed.), pp. 19-26, DAAAM International Vienna,Vienna, (2010) **Brozović, M**.; Jurković, V.; Kovačević, D.: Guidelines of Forming Communication Signs in the Area of Safety, Tehnički vjesnik 18(2011)1, 91-94 (SCI-Exp, IF=0,347)
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	- „Tehnological factors of a graphic design study for systematic quality improvement“ (project leader: Professor Stanislav Bolanča PhD (128-1281955-1962) - “Quantum and quality evaluation criteria of a graphical reproduction” (project leader: Professor Nikola Mravac PhD) MZOS (128-1281955-1960)
Number of successful supervision undertakings which resulted in completion of doctoral thesis	
Table 1. Detailed list of teaching staff	
Name	**Vilko Žiljak, PhD, full professor**
Short CV	Vilko Žiljak was born in Sveti Ivan Zelina on December 18, 1946. Since 1959 he has been living in Zagreb and received his entire education there. After finishing high school, he studied at the Faculty of Science, where he earned the title of „engineer in experimental physics“ in 1973. He completed his doctoral studies in 1981 at the Faculty of Electrical Engineering and earned the title „doctor of technical sciences, field of computing sciences“. V. Žiljak has been permanently employed since 1970. Since 1982 he has been employed with the Faculty of Graphic Arts, as a professor and Head of the Department of Typefaces and Computers. He teaches in the postgraduate programs at the Faculty of Electrical Engineering and Computing, Faculty of Organization and Informatics Varaždin, School of Medicine, Faculty of Civil Engineering, Faculty of Graphic Arts and Faculty of Economics and Business, and undergraduate programs at the Faculty of Architecture (School of Design) and at the Polytechnic of Zagreb (Professional Study in Information Technologies). In his work, he has been engaged in research, development and application of informatic, computer and graphic technology in a wider scientific area. In Croatia, he is considered a pioneer in three scientific branches: mathematical modeling and simulation, computer graphic and printing, and computer-assisted visual research. He published his first books in Croatian on these areas, and organised instruction in undregraduate and postgraduate studies. He has published papers as an author and co-author in the following scientific fields: technical science (computing, graphic technology, geology), medicine, social (education, sociology, information science, economic science), humanities (science in art) and natural sciences. His biography lists 360 titles (www.ziljak.hr) He has published more than a hundred scientific and professional papers: papers in internationally recognised journals and papers in proceedings from international conventions. He has held about 50 lectures at international and domestic scientific symposiums, and published about 50 professional papers and popular science articles. He has also written instructional texts: ten books (four of which in foreign languages for

	foreign publishers), ten book chapters and instructional texts mandatory in undergraduate and postgraduate courses.
Date of last academic appointment to the teaching and research position	2004, full professor with tenure
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	1. V. Žiljak, K. Pap, I. Žiljak, "CMYKIR SECURITY GRAPHICS SEPARATION IN THE INFRARED AREA", Infrared Physics and Technology Vol.52. No.2-3, ISSN 1350-4495, Elsevier B.V. DOI:10.1016/j.infrared.2009.01.001, p: 62-69, (2009) (CC, SCI, SCI-Expanded) 2.Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana; Žiljak-Vujić, Jana. Managing dual color properties with the Z-parameter in the visual and NIR spectrum. // Infrared physics & technology. 55 (2012) ; 326-336 (CC , SCI, SCI-Expanded). 3.Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana. DEVELOPMENT OF A PROTOTYPE FOR ZRGB INFRAREDESIGN DEVICE. // Technical Gazette. 18 (2011) , 2; 153-159 , IF 0,601 4.Vilko Ziljak, Klaudio Pap, Jana Ziljak Vujic, Josipa Lajkovic MODELING AND SIMULATION AS THE BASIS FOR HYBRIDITY IN THE GRAPHIC DISCIPLINE LEARNING/TEACHING AREA; Acta Graphica; Vol 20, No 1-4 (2009) . 5.Tajana Koren, Vilko Ziljak, Nikolina Stanic-Loknar, Aleksandra Bernesek ; Mathematical MODELS OF THE SINUSOIDAL SCREEN FAMILY ; Acta Graphica; Vol 22, No 1-2 (2011) . 6.Maja Turčić, Vilko Žiljak, Ivana Ž.–Stanimirović INDIVIDUAL STOCHASTIC SCREENING FOR THE DEVELOPMENT OF COMPUTER GRAPHICS; Acta Graphica | Vol 22, No 3-4 (2011) 7.V. Žiljak, J. Akalović, J.Ž. VujićUpravljanje bojilima na koži u vidljivom i infracrvenom spektru / Dye control on leather in the visual and infrared spectrum, Tekstil No 8 Vol 60, pp.335-363; UDK 677 + 687(05), ISSN 0492-5882, Zagreb, 2011. 8. Rajendradrakumar Anayath, V. Žiljak, Invisible pics hit newspaper, RIND Survey, Feb. 2011, Rs.40.00 Vol 32 - Issue 2, pp 4-6, Chennal, India 9. M. Barišić, K. Pap, I. Ž. Stanimirović, V. ŽiljakDouble Image Design in Newspaper Production. // Acta graphica. 21 (2010) , 1-2; 27-33 10.INFRARED HIDDEN CMYK GRAPHICS, The Imaging Science Journal, (1368-2199) 58 (2010); 20-27; ISSN: 1368-2199 Online ISSN: 1743-131X, imsmpa 045.3d DOI: 1179/136821909X12520525092882, (CC, SCI-Expanded) 11.Double Separation Method for Translation of the Infrared Information into a Visible Area, JIOS; journal of information and organizational science, VOL. 33, NO. 1 (2009) ; UDC 004.92:004.056 ; ISSN 1846-3312; e-ISSN 1846-9418
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Graphic of documents and securities, 128-1281957-1961 Scientific project leader; "Digital systems in typography", 1281957, for projects: Digitalization of museum heritage, 128-1281957-1958, project leader D. Agić Improvement of workflows in graphic reproduction processes, 128-1281957-1956, project leader K. Pap Graphic of documents and securities, 128-1281957-1961, V Ziljak
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1.Petra Poldrugač, Improvement of methods of detecting counterfeited graphics in securities, Faculty of Graphic Arts, 2011. 2.Petar Miljković, Integration model of digital workflows 3. Maja Rudolf – Offset production, Faculty of Graphic Arts, 2012 Post stamps security graphics my means of dual features of dyes with Z parameters and individualised grating elements, Faculty of Graphic Arts, 2013
Table 1. Detailed list of teaching staff	
Name	***Darko Babić***

Short CV	I was born in Zagreb on 30 June 1948. I finished elementary school and high school in Zagreb, where I enrolled in the Faculty of Mechanical Engineering and Naval Architecture. In 1975, I graduated from the faculty and took employment in the Design Department of Pliva, Pharmaceutical Company. My position included the folowing duties: designing (Fodder factory in Kalinovica, Chewing gum factory in Nerežišće, Brač), reconstruction of the existing plants (synthesis plants, candy production plant in Borongaj, Zagreb, C-vitamin production plant) and the construction of different devices and equipment (exchangers, vibrating sieves, central heating systems etc.). In 1978 I was hired by the Graphic Technology College in Zagreb as an assistant at the Department of Graphic Finishing. I defended my master's thesis in 1984, and my doctoral dissertation in 1992 at the Faculty of Mechanical Engineering and Naval Architecture in Zagreb. Besides the basic subject – graphic finishing, I taught practice courses and seminars in Descriptive Geometry, Machine Elements and Technical Mechanics at the Graphic Technology College, as well as part of the practice courses in Quality Control. In 1987 I was appointed scientific researcher in the field of mechanical engineering, and in 1988 I was appointed lecturer for the scientific field of mechanical engineering in the courses Graphic Product Design and Introduction to Graphic Technology at the Graphic Technology College in Zagreb. The Graphic Technology College became the Faculty of Graphic Arts in 1989 and since then I have been teaching the following courses at the Faculty: Designing Graphic Products and Introduction to Graphic Technology (one-semester courses) and Graphic Finishing (three-semester course: Graphic Finishing 1, Graphic Finishing 2 – Bookbinding and Graphic Finishing 3 – packaging). I was appointed research associate in 1992, and in 1993 I was appointed assistant professor at the Faculty of Mechanical Engineering and Naval Architecture in Zagreb. I was re-elected as assistant professor in 1999, and associate professor in 2003. I was registered as a research associate in the field of mechanical engineering on November 24 1992 in the registry of the Ministry of Science and Technology under the number 100023. I furnished the instruction room for the courses Graphic Finishing, Designing Graphic Products and Introduction to Graphic Technology. With the help of donations and faculty resources I procured new machines and laboratory devices, modernized the instruction by introducing audio-visual tools and started up the Graphic Centre for designing and examination, which I also manage. In the school years 1995/1996 and 1996/1997 I was the Vice-Dean for financing, scientific-research work and working while studying. During my term of office as Vice-Dean I participated in the procurement of resources for furnishing the faculty halls. Apart from that, I launched the working-while-studying program in Osijek, two classes in Zagreb, and I contracted the working-while-studying program in Rijeka. From 1981 to 1990 I participated in scientific programs of the Ministry of Science and Technology in the field of graphic materials under the common title „ Problems of reproduction in graphic technology“. From 1990 to 1993 I participated in the project of the Ministry of Science and Technology in the field of graphic materials titled „Exploring the processes and materials in graphic technology“, and at the end of May 1997 the Ministry of Science accepted the „Control and quality of cardboard packaging“ project that received the highest grade for these types of projects. I was the main researcher in this project, which was completed in 2001. I wrote a university textbook, proposed a curriculum for the postgraduate program for the Graphic Finishing course at the Faculty of Graphic Arts. I reviewed several books for *Školska knjiga*, worked as an associate in the preparation of several books and in the preparation of the technical encyclopedia of the „Miroslav Krleža“ Institute of Lexicography. I have been a member of the Croatian

	Academy of Engineering since 2000. I am also a member of the Editorial Board of the „Ambalaža“ journal, and during 1999 and 2000 I was the main editor and editor-in-chief of this journal. I was the leader, moderator and organiser of counseling for the international exibition „Modernpak” at the Zagreb Fair in 1996. I participated in the translation and patent processing in the area of graphic finishing for the State Intellectual Property Office. I was also the president of the Technical committee 130 for graphic technology at the State Office for Metrolofy, the member of the Presidency of the Croatian Packaging Systems Producers Association Zagreb at the Croatian Chamber of Economy. I am a long-term member of the jury in the selection of best packaging, awarded by the Zagreb Fair within the "Modernpak" exhibition. The award is called *Zlatna jabuka (Golden Apple)*. I am a member of two committees within the regular activities at the Faculty of Graphic Arts (Instruction Committee and Rector's Award Selection Committee). I am a member of Croatian ergonomics society and a long time secretary and active member of the oldest amateur musical society „Sloga“.
Date of last academic appointment to the teaching and research position	The selection procedure for awarding tenure is pending
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	S. Pasanec Preprotić, D. Babić, A. Tuzović, *"The influence of Paper permanence on Adhesive Joint Strength"*, TTEM-Technics Technologies Education Management, 6 (4) (2011), 1024-1031. ISSN 1840-1503 (SCI Expanded IF 0,256, Cit: 0/0) S. Pasanec Preprotić**,** D. Babić, A. Tuzović, *"Research of Adhesive Joint Strength Dependency in Relation to Position of Loose Leaf in Text Block",* Technical Gazette, 19 (2012), 43-49. ISSN 1330-3651 (SCI Expanded IF 0,083, Cit: 0/0) Pasanec Preprotić, D. Babić, A. Tuzović, *"Bindability of High Grades Papers by Perfect Binding Technique"*, Acta Graph. 22(1-2), (2011), 21-32. ISSN 0353-4707 (INSPEC, GEOARCHIVE, EBSCO, DOAJ) **B. Lajic, D. Babic, D. Jurecic; *Influence of Paper Type end hight of Waves on the Quality of Three-Layer Corrugated Carboard,* Proceedings of the 5th International Conference on Computer aided Design and Manufacturing CADAM'07 /Obsieger, Boris (ur.), Rijeka: Zigo, 2007. (ISBN: 978-953-7142-24-7)., Published in Advanced Engineering 2(2008)1, ISSN 1846-5900 (predavanje, međunarodna recenzija, objavljeni rad, znanstveni)** D. Jurečić, B. Lajić, D. Babić; *Primjena RFID mikročipa pri rukovanju ambalažom*; TISKARSTVO 2008, CIP zapis dostupan u računalnom katalogu Nacionalne i sveučilišne knjižnice u Zagrebu pod brojem 657497, ISBN 978-953-7064-08-2, Stubičke Toplice, 2008. Jurecic, D.; Babic, D.; Lajic, B.; *Important Factors of Corrugated Cardboard'S Quality of Punching Resistence*, Annals of DAAAM for 2008 & Proceedings of the 19th International DAAAM Symposium, 22-25th October 2008, Trnava, Slovakia, ISSN 1726-9679, ISBN 978-3-901509-68-1, Katalinic, B. (Ed.), pp. 0649-0650, Published by DAAAM International Vienna, Vienna(2008). Jurečić, D.; Babić, D.; Lajić, B.; *Influence of Different Constructive Solutions on Strength of Transport Packaging*; 10th International Design

	Conference DESIGN 2008, (ed. Vilko Žiljak), Dubrovnik, pp. 1469 – 1475, 2008 Jurečić, D.; Babić, D.; Lajić, B.; *Važni faktori kvalitete valovitog kartona* // Annals of DAAAM 2008& Proceedings / B Katalinić (ur.). Beč: DAAAM International, Vienna, 2008. 0689-0690 (poster, međunarodna recenzija, objavljeni rad, znanstveni). Relevant factors of corrugated paperboard quality // Annals of DAAAM 2008 & Proceedings / B Katalinić (ur.). Beč: DAAAM International, Vienna, 2008. 0689-0690 (poster, internacional rewiev, published work, scientific) Babić, Darko; Lajic, Branka; Jurečić, Denis; Pasanec Preprotić, Suzana: *The Construction of Corrugated Boxes as a Key Parameter of their Strength* // Proceeding of the Design 2010 Workshop: Design graphics with security elements /Žiljak, Vilko Milčić, Diana (ur.)/ ; - Zagreb: University of Zagreb, Faculty of Graphic Arts, 2010. 1957-1962 (ISBN: 978-953-7738-08-2) (predavanje,međunarodna recenzija,objavljeni rad, znanstveni). Babić, Darko; Miljković, Petar, Jurečić, Denis. *Uses of Resource Links for Metadata Flow in Automatic Workfl* // Proceeding of the Design 2010 Workshop: Design graphics with security elements/Žiljak, Vilko, Milčić, Diana (ur.); Zagreb: University of Zagreb, Faculty of Graphic Arts, 2010. 1957-1962 (ISBN: 978-953-7738-08-2) / (ur. Žiljak, Vilko ; Milčić, Diana). (predavanje,međunarodna recenzija,objavljeni rad,znanstveni). S. Pasanec Preprotić, D. Jurečić, D. Babić, B. Lajić, *"Important Factors of Paperback Books Quality of Adhesion Strength in Adhesive Binding"*, Proceedings, 21st International DAAAM Symposium: "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions", (ed. B. Katalinić), Viena, (2010), 0953-0954. ISBN 978-3-901509-73-5, ISSN 1726-9679. (INSPEC) D. Babić, B. Lajić, D. Jurečić, S. Pasanec Preprotić, *"The Construction of Corrugated Boxes as a key Parameter of their Strength"*, Proceedings, 11th International Design Conference, (ed. V. Žiljak, D. Milčić), Zagreb, (2010), 1957-1962. ISBN 978-953-7738-08-2 S. Pasanec Preprotić, D. Babić, A. Tuzović; *Vrednovanje kvalitete sljepljnog spoja obzirom na fizikalna svojstva papira*, Proceedings, 2nd International scientific and professional conference of graphic technology and design GeDIT, (ed. D. Babić), Kiseljak, (2011), 106-113. ISSN 2232-8831
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	
Number of successful supervision undertakings which resulted in completion of doctoral thesis	2
Table 1. Detailed list of teaching staff	
Name	Vedran Mudronja

Short CV	Vedran Mudronja, PhD, was born on October 13, 1948. He earned his degree in 1974 at the Production department of the Faculty of Mechanical Engineering and Naval Architecture in Zagreb. He received his Master's degree from the same faculty in 1982, and his doctoral degree in 1989. He was hired by his alma mater in October 1974. He was appointed assistant professor in 1990, associate professor in 1996, full professor in 2001, and full professor with tenure in 2006. Since 1974 he has been continuously involved in teaching in the undergraduate and postgraduate program in all the courses of the Chair of measurement and control of the Department of Quality. Since 1992 he has led the Laboratory for precise measurements of length (Croatian national laboratory for length). As author or co-author he published more than 70 original scientific papers in journals and proceedings from scientific and professional symposiums. He has participated actively in the realization of around ten domestic and international scientific research projects. During his work at the Faculty he was a member of different faculty boards and committees. From 1998 to 2002 he performed the duty of Vice-Dean for scientific work and cooperation with economy. From 2003 to 2012. godine he was the head of the Department of Quality. He is married and father of two children. He is fluent in written and spoken English and semi-fluent in Italian.
Date of last academic appointment to the teaching and research position	In 2006 he was appointed full professor with tenure.
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	1. Mudronja, Vedran. Kontrolna karta – slika procesa // 13. Hrvatska konferencija o kvaliteti, 4. Znanstveni skup Hrvatskog društva za kvalitetu, Brijuni, Hrvatska, 2013. (predavanje, objavljeni rad, stručni) 2. Katic, Marko; Mudronja, Vedran. Final report on EURAMET.L-K1.2: EURAMET comparison of gauge blocks by interferometry. // Metrologia, Technical Supplement. 49 (2012); (članak, znanstveni) 3. Mudronja, Vedran; Runje, Biserka; Katić, Marko; Šimunović, Vedran; Baršić, Gorana. Discussion About Six Sigma Statistical Definition // International Conference Management of Technology MOTSP 2012 / Zadar, Hrvatska, 2012-07-14/16. 125-132 (predavanje, međunarodna recenzija, objavljeni rad, znanstveni) 4. Mudronja, Vedran. Difference between long-term and short-term process capability // MATRIB'12 International Conference, Vela Luka, Croatia 2012. (predavanje, međunarodna recenzija, objavljeni rad, znanstveni) 5. Mudronja, Vedran. Što smo naučili od gurua kvalitete? // 12. Hrvatska konferencija o kvaliteti, 3. Znanstveni skup Hrvatskog društva za kvalitetu, „Kvalitetom do uspješnog društva", Brijuni, Hrvatska, 2012. (predavanje, objavljeni rad, stručni) 6. Vedran Mudronja. Akreditacija, sljedivost, međulaboratorijske usporedbe, umjernice - iskustva Nacionalnog laboratorija za duljinu // HMD 4. Savjetovanje - Iskustva laboratorija u primjeni HRN EN ISO/IEC 17025, 2012. (pozvano predavanje, neobjavljeni rad) 7. Katić, Marko; Šimunović, Vedran; Mudronja, Vedran. Modification of Kosters Primary Gauge Block Interferometer // 13th International Scientific Conference on Production Engineering CIM 2011 / Biograd, Hrvatska, 2011-06-16/18. 45-49 (predavanje,međunarodna recenzija,objavljeni rad,znanstveni) 8. Šimunović, Vedran; Ferdelji, Nenad; Katić, Marko; Mudronja, Vedran. Calculation Of Pitch Diameter Of Symmetrical Thread Plug Gauges // 13th International Scientific Conference on Production Engineering CIM 2011 / Biograd, Hrvatska, 2011-06-16/18. 28-32 (predavanje, međunarodna recenzija, objavljeni rad, znanstveni) 9. Mudronja, Vedran. Kako tumačiti statističku definiciju metodologije „šest

	sigma“? // 11. Hrvatska konferencija o kvaliteti i 2. Znanstveni skup HDK, Vodice, Hrvatska, 2011. (predavanje, domaća recenzija, objavljeni rad , znanstveni) 10. Katic, Marko; Mudronja, Vedran; Simunovic, Vedran. Accuracy limitations of modified Zeiss interference comparator // MacroScale 2011 – Recent developments in traceable dimensional measurements / Wabern, Švicarska, 2011-10-04/06. (poster, međunarodna recenzija, sažetak, znanstveni) 11. Katić, Marko; Mudronja, Vedran; Šimunović, Vedran. Edge detection uncertainty in fringe analysis // 21st DAAAM World Symposium, "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions" / Zadar, Hrvatska, 2010-10-20/23. 1277-1278 (poster, međunarodna recenzija, objavljeni rad, znanstveni) 12. Šimunović, Vedran; Mudronja, Vedran; Katić, Marko. Stability of roundness measurement system // 21st DAAAM World Symposium, "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions" / Zadar, Hrvatska, 2010-10-20/23. 1283-1284 (poster, međunarodna recenzija, objavljeni rad, znanstveni) 13. Rumbak, Slavko; Mudronja Vedran; Šakić, Nikola; Cajner, Hrvoje; Bogut, Marijan. Analysis of ignition risk to ball bearings in rotating equipment in explosive atmospheres // Petroleum & Chemical Industry Committee - Europe" - "PCIC". Oslo, Norveška, 2010. (poster, međunarodna recenzija, sažetak, znanstveni) 14. Mudronja, Vedran. Sigma-mjera kvalitete // 10. Hrvatska konferencija o kvaliteti i 1. Znanstveni skup Hrvatskog društva za kvalitetu, Šibenik, Hrvatska, 2010. (poster, sažetak, znanstveni) 15. Bertozzi, Roberto; Gamberi, Luigi; Mudronja, Vedran. Le misura e i laboratori accreditati. // Tuto Misure. XI (2009) ; 191-195 (članak, znanstveni) 16. Mudronja, Vedran. SIGMA – Measure of quality // 12th International scientific conference on production engineering –CIM2009, Biograd, Croatia, 2009. (predavanje, međunarodna recenzija, objavljeni rad, znanstveni) 17. Mudronja, Vedran; Katić, Marko; Šimunović, Vedran. Improvement of roundness measurement with Mahr MMQ3 // 1st Regional Metrology Organizations Symposium – RMO 2008, 20th International Metrology Symposium / Dubrovnik, Hrvatska, 2008-11-12/15. 209-212 (predavanje, međunarodna recenzija, objavljeni rad, znanstveni) 18. Medić, Srđan; Mudronja, Vedran; Runje, Biserka. Calibration of line scales at LFSB // Proceedings 1 st Regional Metrology Organizations Symposium – RMO 2008; 20th International Metrology Symposium. Cavtat, 2008. (poster, međunarodna recenzija, objavljeni rad, znanstveni)
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Project 0120-013: National laboratory for longitude. Ministry of science, education and sports 2001–2013. (Project leader).
Number of successful supervision undertakings which resulted in completion of doctoral thesis	7
Table 1. Detailed list of teaching staff	
Name	***Đurđica Parac-Osterman***
Short CV	2005 full professor with tenure at the Faculty of Textile Technology; 2000-2005 full professor at the Faculty of Textile Technology 1993-2000 associate professor at the Faculty of Textile Technology 1987-1993 assistant professor at the Faculty of Textile Technology 1972 assistant at the Faculty of Textile Technology 1988-1991 visiting professor at the Facultyof Technology in Banja Luka 1998-2004 adjunct professor in the doctoral program at the University of Maribor 2000 – to date, adjunct professor in the doctoral program at the Faculty of Graphic

	Arts in Zagreb and University of Dubrovnik **Project manager:** national „Dyes and colours in the process of eco-friendly sustainable development“(1171419-1401) and „Logic phase application in the processes of colouring and color measurement“ (0117004); *bilateral Slovenia/Croatia:”Textile fibres as protection against ultraviolet radiation” and *EUREKA Project E!2983 TEXTILWET “ Areas of scientific work; Chemistry of dyes, physical, chemical and dyeing properties of natural and chemical fibers, rheological properties in the thickener/printing paste system, waste water, the phenomenon of color in application and multimedia, the science of color, colorimetry, spectrophotometry, theory of color, color and marketing. Exploring the binding of multifunctional dyes on textile material and characterization of properties from the aspect of multiple application (UV protection, passive sensors, military clothes, microbiological and other properties). Natural dyes, preservation and analysis of historical textile, positive effect on health, creativity, fashion and tourism. The significance of color in management and promotional presentations.
Date of last academic appointment to the teaching and research position	2005 – full professor with tenure
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	Glogar, M. I.; Parac – Osterman, Đ.; Grundler, D.; Rolich, T.: Research of Influences of Surface Structure of Coloured Textiles: Applying Fuzzy Logic, Coloration Technology, 127 (2011) 6, 396 – 403 Parac – Osterman, Đ.; Hajsan Dolinar, V.; Glogar, M. I.: Clothing Colours and Behaviour of Pupils of Primary School Age, Tekstil 60 (2011)7, 295 – 306 Zjakić, Igor; Parac-Osterman, Djurdjica; Bates, Irena.; New approach to metamerism measurement on halftone color images. // Measurement. 44 (2011) , 8; 1441-1447 Parac-Osterman, Đurđica; Đurašević, V. Termokromna bojila - termo senzori, Blaž Baromić, 5. medunarodna konferencija tiskarstva, dizajna i grafičkih komunikacija, 2011. 544-552 Parac – Osterman, Đ.; Sutlović, A.; Đurašević, V.; Glogar, M. I.: Characteristics of Dyes in New Millennium, Proceedings of 4th International scientific – professional Symposium Textile Science and Economy, Željko, P.; Ujević, D. (Ed.), Zagreb, University in Zagrebu Faculty of Textile Technology, Zagreb, Croatia, (2011), 135 – 140 Glogar, M. I.; Parac – Osterman, Đ.; Laštro, A.: Application of Numerical Evaluation of Colour in Harmonious Relations Definition Among Colours in Textile Design, Tekstil 61(2012)1-6, 74 – 94 Hunjet, A. Parac-Osterman, Đ. Vučaj, E.: Statistic Analyses of the Color Experience According to the Age of the Observer (accepted for publication in: Coll.Antropol.Vol.37, Suppl 2 (2013). Glogar, M. I.; Parac-Osterman, Đ.: Textile Texture Influence on Colour Apperance, The Proceedings of Colour - Effects and Affects, Interim Meeting of the International Colour Association, Stockholm, Bergstörm, B. (Ed.), Švedska, 2008. 19-24 Parac – Osterman, Đ.; Glogar, M. I.: Colour and Trademarks, "Blaž Baromić" 11th International Conference on Printing Design and Graphic Communications Proceedings, Senj, Croatia, 30. (2009.), 125 – 129, Parac-Osterman, Đurđica; Đurašević, Vedran; Sutlović, Ana. (2007); Comparison of Chemical and Physical-chemical Discoloring Methods. // Kemija u industriji. 56, 543-549 Gorenšek, M.; Urbas, R.; Strnad S.; Parac-Osterman Đ.,(2007);The Evaluation of a Natural Pigment in Cotton as a UV Absorber, American Association of Textile Chemists & Colorists. 7, 50-55 Parac-Osterman, Đ.; Sutlović, A.; Đurašević, V. Pročišćavanje otpadnih voda bojadisaone fizikalno - kemijskom metodom i biosorpcijom - mogućnost recikliranja vode, Tekstil, 59 (2011) , 7; 307-316

List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	"Boja I bojila u procesu ekološki prihvatljivog I održivog razvoja" (br. 117-1171419-1401), MZOŠ RH 2007-2011
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1. Golob, Darko; „Računalniško receptiranje barv z uporabo nevronskih mrež" / doktorska disertacija, Maribor : Fakultet za strojništvo, 2003, Maribor, Slovenija 2. Glogar, Martinia Ira; "Studija optičkih svojstava obojene tekstilne površine i primjena "CMP" operacija"/ doktorska disertacija, Zagreb: Tekstilno-tehnološki fakultet, 2006. 3. Hunjet, Anica; "Utjecaj okoline na doživljaj boje" / doktorska disertacija, Zagreb: Tekstilno-tehnološki fakultet, 2006. 4. Sutlović Ana; „Studij prirodnih bojila-doprinos humanoj ekologiji"/ doktorska disertacija, Zagreb: Tekstilno-tehnološki fakultet, 2008. 5. Đurašević Vedran; „Istraživanje i primjena višenamjenskih bojila" / doktorska disertacija, Zagreb: Tekstilno-tehnološki fakultet, 2011.

Table 1. Detailed list of teaching staff	
Name	***Mario Plenković, PhD***
Short CV	Mario Plenković, PhD, research fellow, was appointed full professor with tenure on 10 November 1998 in the discipline of social sciences, scientific field Information and communication sciences, scientific branch communication science (University of Zagreb, Zagreb. He earned his doctoral degree in social sciences in the area of organization and information sciences (communication science) by defending the doctoral disseration titled: "A model of public radio and television informing and communicating in the contemporary society" (University of Zagreb, Zagreb, 1978). He earned his Master's degree in information science (communication science) by defending the thesis titled „Informational and communicational significance of radio and television shows" (University of Zagreb, Zagreb, 1976). He is the program founder of the following new study programs: Study of Journalism (quadrennial) at the Faculty of Political Science, University of Zagreb (1985); Study of Culture and Tourism (Communication in Tourism) at the Faculty of Philosophy in Zadar (1997); Postgraduate studies in information science at the Faculty of Philosophy in Zadar, University of Split (2001); Study of Media Communications at the Faculty of Electrical Engineering and Computer Science, University of Maribor, Maribor, Slovenia (2001). He is the head of the Department of Communication Science at the Faculty of Graphic Arts, University of Zagreb (1998 - 2011); Head of the Institute for New Media and New Technologies for E-learning, University of Maribor Maribor, Slovenia (2001 - 2011); Head of the postgraduate studies in Information Science at the Faculty of Philosophy in Zadar, University of Zadar (2001 - 2006); President of the Council for postgraduate studies in Information Science, University of Zadar (2001 - 2007); Head professor in the following courses: Postgraduate doctoral studies at the University of Zadar (2001 - 2008): Systematic Communication Science, Qualitative Methodology, Media Communication, Electronic Media, Public Relations, Media, Public and Public Relations, Intercultural Communication; Postgraduate and doctoral studies at FERI, University of Maribor, Maribor, Slovenia, (2001 - 2011): Media Communication, Public Relations, Postgraduate and doctoral studies at the Faculty of Tourism and Hospitality Management, University of Rijeka, Opatija (2001. - 2011.): Culture and Ethics of Business Communication. Faculty of Graphic Arts in Zagreb (1998. - 2011.): Communication Science, Visual Communication, Communication in Graphic Design, Business Communication, Media Communication. Doctoral studies of the Faculty of Graphic Arts in zagreb: Qualitative Methodology of Graphic Communication, Communication Science: Graphic Communication; Media Campaign Design. He is the President of the

	Croatian Communication Association (1993. - 2011.); Vice-President of the International Federation of Communication Associations (2010 – 2012); leader of scientific research projects, director and leader of 19 international scientific conferences at "Inter University Centre Dubrovnik", and co-organizer of 18 international scientific conventions "Society and Technology /Društvo i tehnologija"; Principal editor and editor-in-chief of the scientific journal "Informatologia" (1980 - 2011) and "Media, Culture and Public Relations" (2001 – 2011).
Date of last academic appointment to the teaching and research position	10 November 1998
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. Plenković, Mario; Korenjak, Marko; Korenjak Dragica. **Communication Science in Network Marketing** . Maribor : Alma Mater Europea, 2013 (monografija). 2. Plenković, Mario. **Holistic strategy of media communication and Cultural hybridization of European digitalized society** // The Dialogue with the Other: Balkan Dimensions of European Identity / Zlateva, Minka (ur.). Sofija, Bugarska : "St.Kliment Ohridski" University Press, 2011. Str. 136-147. 3. Plenković, Mario; Kučiš, Vlasta. **Das Mediensystem Kroatiens** // Internationales Handbuch Medien / Hasebrink, Uwe ; Schulz, Wolfgang (ur.). Baden-Baden : Hans-Bredow-Institut, 2009.. Str. 396-405. 4. Plenković, Mario; Radoš, Goran; Plenković, Juraj. **For quality of life** // Edukacja, Technika - Informatyka / Furmanek, Waldemar ; Walat, Wojciech (ur.). Rzeszow : University of Rzeszow, 2009. Str. 41-46. 5. Dugonik, Bojan; Plenković, Mario. **The role of future generation hybrid TV technologies in education**. // *Informatologia*. **45** (2012) , 2; 103-114 (članak, znanstveni). 6. Tomažić, Tina; Plenković, Mario. **Media market in the context of profitability**. // *Otazky Žurnalistiky*. **55** (2012) , 1-2; 3-14 (članak, znanstveni). 7. Plenković, Mario; Mustić, Daria. **Graphic technologies and communicational behaviour in ecological Crisesa**. // *Informatologia*. **44** (2011) , 4; 296-308 (članak, znanstveni). 8. Plenković, Juraj; Kučiš, Vlasta; Mustić, Daria; Plenković, Mario. **UTJECAJ VJERSKIH SLOBODA NA KOMUNIKACIJU I POVJERNJE MEĐU NARODIMA**. // *Informatologia*. **43** (2010) , 2; 105-111 (članak, znanstveni). 9. Plenković, Juraj; Plenković, Mario; Tatković, Nevenka. **Compensating for lost abilities**. // *Education-Technology-Computer Science. Scientific Annual*. **1** (2010) ; 191-195 (članak, znanstveni). 10. Plenković, Mario; Galičić, Vlado; Kučiš, Vlasta. **ANALYSIS OF HOTEL NAMES IN CROATIA AS A TOOL OF MARKETING STRATEGY**. // *Tourism and hospitality management*. **16** (2010) , 2; 207-218 (članak, znanstveni).

	11. Plenković, Mario; Tomažić, Tina; Kučiš, Vlasta. **Holistic strategy of public action and visual digitalization in convergent environment**. // *Observatorio*. **4** (2010) , 2; 197-210 (članak, znanstveni).
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Croatian media communication in convergent environment 128-000000-3620
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1 (at the Faculty of Graphic Arts)

Table 2. Detailed list of supervisors at the doctoral study programme

Add a table for each supervisor

Name	***Stanislav Bolanča***
Short CV	After having graduated from Faculty of Technology, University of Zagreb, Stanislav Bolanča started the study in Analytical chemistry at the University of Zagreb. He completed his Master's degree in 1978 primarily focusing on graphic colour analysis. He completed his doctoral dissertation on the subject of graphic imprints colorimetry at his home faculty in 1981. The paper has been categorised in the technical sciences dicipline. After having graduated from his undergraduate studies, Stanislav Bolanča got employed at the printing office, where he started his independent and innovative work career. His next workplace was a light bulb factory, where he proved to be an innovative professional. He was working part time at the Graphic Vocational Studies simultaneously and got appointed to teaching assistant position. Later on, the Graphic Vocational Studies were refounded as Faculty of Graphic Arts University of Zagreb. He was appointed to assistant professor position in 1985, associate professor in 1991, full professor in 1998 and a tenured professor in 2003. At the University, Stanislav Bolanča is a member of wide range of Boards and Committees, such as: Academic Standards Committee, Work Control Commission, Publications Board and Home Board. He was a member of both University Council and University Senate, as well as Board of Science and Technology. At the Croatian Academy of Technical Sciences he founded the Department of Graphic engineering, where he also held the function of its registrar. Today he is the member of the Academy. While at the University Porfessors Association, he was the President of the Court of honour. He held many important positions at the faculty and the importance of these is most appreciated: president of the first Science Unit at the Graphics Vocational Studies and Faculty, Head of the department, founder and Head of two postgraduate studies, Vicedean for teaching and science. He was the faculty Dean for three terms of office. He was a member or a chairman of many Boards as well as the syndicate registrar. As lecturer, he taught at three national universities as well as one international. His area of interest and main professional occupation is printing technology. He contributed immensely to printing technology by publishing several University textbooks, organizing several new courses and providing for several research laboratories. In current, as well as in several previous, Stanislav Bolanča is course provider and lecturer at the following courses: Main printing technologies, Small printing technologies, Digital printing, Packaging printing, two hours per week, and at the doctoral study on a course Raster elements in printing.

Date of last academic appointment to the teaching and research position	He was appointed a tenured professor in 2003.
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	Original scientific paper in CC journal: 2. Modrić, Damir; Bolanča, Stanislav; Beuc, Robert. **Monte Carlo Modeling of Light Scattering in Paper**. // *Journal of Imaging Science and Technology*. **53** (2009) , 2; 020201-1-020201-8 Scientific paper in other gournals: 2. Majnarić, Igor; Bolanča, Stanislav; Golubović, Kristijan. **Neke karakteristike transfernih folija načinjenih tehnikom mlaza tinte te njihov utjecaj na kvalitetu otisaka na pamučnoj tkanini**. // *Tekstil : časopis za tekstilnu tehnologiju i konfekciju*. **59** (2010) , 10; 456-462 (article, scientific). Scientific paper in conference proceedings with international review: 10. Bartolić, Tomislav; Majnarić, Igor; Bolanča, Stanislav. **Impact of Printing Additional Inks on Multicolor Reproduction with Liquid Electrophotography Toner** // *Conference Proceedings MATRIB 2013* / Alar, Željko ; Jakovljević, Suzana ; Šolić, Sanja (ur.). Zagreb : Croatian Society for Materials and Tribology, 2013. 29-41 11. Bolanča Mirković, Ivana; Majnarić, Igor; Bolanča, Stanislav. **RECYCLING OPTIMISATION OF THE ELECTROPHOTOGRAPHIC PRINTS** // *Proceedings of the 8th International Conference of DAAAM Baltic Industrial Engineering* / Otto, Tauno (ur.). Tallinn : Tallinn University of Technology, 2012. 119-124 12. Bolanča Mirković, Ivana; Majnarić, Igor; Bolanča, Stanislav. **ECOLOGICAL SUSTAINABILITY OF THE SHEETFED OFFSET PRINTING** // *Annals of DAAAM for 2012 & Proceedings of the 23rd International DAAAM Symposium, Volume 23, No.1* / Branko, Katalinić (ur.). Vienna, : DAAAM International, Vienna, Austria, 2012. 947-952 13. Bolanča Mirković, Ivana; Majnarić, Igor; Bolanča Stanislav. **Enviromental Sustainability and Graphic Production** // *Annals of DAAAM for 2011 & Proceedings* / Katalinić, Branko (ur.). Vienna, Austria : DAAAM International Vienna, 2011. 185-186 14. Majnarić, Igor; Bolanča, Stanislav; Morić, Marko; Svilićić, Blaž. **KOLORIMETRIJSKA ANALIZA UV LAKIRANE RIGIDNE VINILNE PODLOGE PRETHODNO OTISNUTE U TEHNICI OFSETNE ELEKTROFOTOGRAFIJE** // *Proccedings of MATRIB 2011* / Schauperl, Z. ; Šolić, S. (ur.). Zagreb : Croatian Society for Materials and Tribology, 2011. 256-265 15. Tahirović, Hasan; Majnarić, Igor; Bolanča Stanislav. **INFLUENCE OF THE OFFSET RUBBER BLANKETS COMPOSITION ON THE SCREEN ELEMENTS REPRODUCTION PRINTED ON DIFFERENT PAPERS** // *13th International Conference on Printing, Design and Graphic Communications Blaž Baromić* / Bolanča, Zdenka (ur.). Zagreb : University of Zagreb Faculty of Graphic Arts, University of Ljubljana Faculty of Natural Science and Engineering, Ogranak matice hrvatske Senj, Pulp and Paper Institute, Ljubljana, 2009. 155-158 16. Bauk, Stanko; Majnarić, Igor; Bolanča, Stanislav; Golubović, Kristijan. **INFLUENCE OF THE UNCOATED PRINTING SUBSTRATES ON THE QUALITY OF THE MONOCHROMATIC DIGITAL PRINTING** // *12th INTERNATIONAL CONFERENCE ON PRINTING, DESIGN AND GRAPHIC COMMUNICATIONS BLAŽ BAROMIĆ* / Bolanča, Zdenka (ur.). Zagreb : University of Zagreb Faculty of Graphic Arts, University of Ljubljana Faculty of Natural Science and Engineering, Ogranak matice hrvatske Senj, Pulp and Paper Institute, Ljubljana, 2008. 41-45 17. Bolanča, Stanislav; Golubović, Kristijan. **TEHNOLOGIJA TISKA OD GUTENBERGA DO DANAS** // *Senjski Zbornik* /

	Glavičić, Miroslav (ur.). Senj : Senjsko muzejsko društvo, Gradski muzej Senj, 2008. 125-146 18. Majnarić, Igor; Bolanča, Stanislav; Bolanča Mirković, Ivana. **The Influence of the Toner Structure on the Quality of Black-white Digital Printing** // *Annals of DAAAM for 2008 & Proceedings of the 19th International DAAAM Symposium "Intelligent manufacturing & Automation : Focus on Next Generation of Intelligent Systems and Solution"* / Branko, Katalinić (ur.). Vienna : DAAAM International Vienna, 2008. 779-780 Book chapters: 4. Majnarić, Igor; Golubović, Kristijan; Bolanča, Stanislav; Modrić, Damir. **VOLTAGE EFFECT ON DEVELOPING PROCESS AND B & W REPRODUCTION** // DAAAM INTERNATIONAL SCIENTIFIC BOOK 2010 / Katalinić, Branko (ur.). Vienna : DAAAM INTERNATIONAL VIENNA, 2010. Str. 509-524. 5. Majnarić, Igor; Modrić, Damir; Golubović, Kristijan; Bolanča, Stanislav. **The 4-Beam Laser Diode Array Influence on the Colour Imaging** // DAAAM International Scientific Book 2009 / Katalinić, Branko (ur.). Vienna : DAAAM International Vienna, 2009. Str. 81-96 6. Milković, Marin; Mrvac, Nikola; Bolanča, Stanislav. **Evaluation of the Chromatic Induction Intensity on Munker-White Samples** // DAAAM International Scientific Book 2008 / Katalinić, Branko (ur.). Vienna : DAAAM International, 2008. Str. 485-498 Other papers in conference proceedings with review: 2. Majnarić, Igor; Bolanča, Stanislav; Morić, Marko; Svilićić, Blaž. **KOLORIMETRIJSKA ANALIZA UV LAKIRANE RIGIDNE VINILNE PODLOGE PRETHODNO OTISNUTE U TEHNICI OFSETNE ELEKTROFOTOGRAFIJE** // *Proccedings of MATRIB 2011* / Schauperl, Z. ; Šolić, S. (ur.). Zagreb : Croatian Society for Materials and Tribology, 2011. 256-265 Conference proceeding summaries: 5. Majnarić, Igor; Golubović, Kristijan; Bolanča, Stanislav; Modrić, Damir. **ANALIZA KOLORNE REPRODUKCIJE KREIRANE PRIMJENOM VIŠESLOJNOG NANAŠANJA BIJELE BOJE NA PVC FOLIJU** // *Abstract Book MATRIB 2010* / Zdravko, Schauperl ; Mateja, Šnajdar (ur.). Zagreb : Croatian Society for Materials and Tribology, 2010. 268-279 6. ANALYSIS OF COLUOR REPRODUCTION CREATED BY APPLYING MULTIPLE LAYERS OF WHITE INK ON PVC FOIL // *Abstract Book MATRIB 2010* / Zdravko, Schauperl ; Mateja, Šnajdar (ur.). Zagreb : Croatian Society for Materials and Tribology, 2010. 268-279 7. Majnarić, Igor; Golubović, Kristijan; Bolanča, Stanislav. **KOLORIMETRIJSKA ANALIZA ELEKTROFOTOGRAFSKIH OTISAKA OTISNUTIH NA PVC-u I POLIKARBONATU** // *Proceedings MATRIB 2009* / Grilec, Krešimir ; Marić, Gojko (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2009. 120-127 8. Majnarić, Igor; Tahirović Hasan; Zjakić Igor; Bolanča Stanislav. **The influence of the structure of the offset rubber on the screen reproduction** // *Abstracts Book MATRIB 2008* / Krešimir, Grilec ; Gojko, Marić ; Suzana, Jakovljević (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2008. 173-182
List of science and art project assigned to in the last 5 year and which are relevant to the doctiral programme	Project: Tehnological factors of a graphic design study for systematic quality improvement. Project as part of a program: Study of materials and graphic reproduction processes in a function of sustainable development.
Number of successful supervision undertakings which resulted in completion	Nikola Mrvac, PhD, Igor Zjakić, PhD, Miroslav Mikota, PhD, Damir Modrić, PhD, Marin Miljković, PhD, Maja Brozović, PhD, Vesna Džimbeg Malčić, PhD, Igor Majnarić, PhD (8)

of doctoral thesis	
Name	***Associate Professor Sanja Mahović Poljaček, MSc PhD***
Short CV	Associate Professor Sanja Mahović Poljaček, MSc PhD was born on 15 December 1974 in Zagreb. She completed her elementary education in Samobor, and graduated from Science V. Grammar School in Zagreb. In 1993 she started her studies in Graphic arts at the University of Zagreb, programme type : technical - technological graphic design and graduated in 1998. As a student she was awarded with scholarship by the Ministry of science and education based on her grade point average. From 1996 to 2001 she worked as a graphic designer at the company called ''Sant'' and in the visual communication studio Grafitti Design. In 2001, she was appointed junior assistant at the Faculty of graphic arts, University of Zagreb, first at the Department of Reproduction Photography, but later at the Department of Printing forms, where she is currently working. She started her postgraduate study in graphic technology at the Faculty of Graphic Arts and completed her Master's Degree, which was entitled ''Influence of different offset printing forms on graphic reproduction quality'' on 13 February 2004. In 2006, she was awarded a scholarship by the Ministry of science, education and sports, which included student traveling arrangements and postgraduate training programme at Forga Institute in München. She completed her doctoral thesis, entitled 'Surface properties categorization of offset printing forms'' on 25 May 2007 at the Faculty of Graphic Arts University of Zagreb. She has been a research associate on many science projects supported by MZOŠ (Ministry of science, education and sports), such as, project code: 128-1201785-2228 New Approach to the Printing Forms Microsurface Characterisation, project code: 128-1281957-1958 "Digitalization of museum art heritage" (since 2007) and a bilateral project with Slovenia 'Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing" since 2010. In 2010 she was awarded a scholarship, which was a part of EU Lifelong Learning Programme for university staff training, founded by the Faculty of chemistry and chemical engeneering in Maribor, Slovenia. In 2013, she was awarded the same scholarship for professional training in Spain, Madrid, at the'' Facultad de Informática de la Universidad Complutense de Madrid''. She was appointed to the research fellow position on 1 March 2011 and to associate professor position on 20 May 2013.
Date of last academic appointment to the teaching and research position	20 May 2013, associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	1. S. Mahović Poljaček, D. Risović, K. Furić, M. Gojo, "Comparison of Fractal and Profilometric Methods for Surface Topography Characterization", App. Sur. Sci. 254 (2008) 3449–3458. (CC) 2. M. Gojo, V. D. Stanković, S. Mahović Poljaček, "Electrochemical Deposition of Gold in Citrate Solution Containing Thallium", Acta Chim. Slov. 55 (2008) 330-337. ISSN: 1318-0207. (CC) 3. B. Lozo, M. Stanić, T. Muck, S. Jamnicki, S. Mahović Poljaček, "Three-Dimensional Ink-Jet Prints: Impact of Infiltrants", Journal of Imaging Science and Technology 52 (2008) 5, 051004-1-051004-8. (SCI) 4. D. Risović, S. Mahović Poljaček, K. Furić, M. Gojo, "Inferring Fractal Dimension of Rough/porous Surfaces - a Comparison of SEM Image Analysis and Electrochemical Impedance Spectroscopy Methods", App. Sur. Sci. 255 (2008) 3063-3070. (CC) 5. D. Risović, S. Mahović Poljaček, M. Gojo, "On Correlation between Fractal Dimension and Profilometric Parameters in Characterization of Surface Topographies" App. Sur. Sci. 255 (2009) 4283-4288. (CC) 6. D. Novaković, S. Dedijer, S. Mahović Poljaček, "A Model for Improving the Flexographic Printing Plate Making Process" Tehnički vjesnik 17 (2010) 4, 403-410. ISSN: 1330-3651. (SCI ex) 7. S. Mahović Poljaček, D. Risović,T. Cigula, M. Gojo, "Application of

	electrochemical impedance spectroscopy in characterization of structural changes of printing plates“ Journal of Solid State electrochemistry 16 (2012), 3; 1077-1089 (CC)
List of science and art project assigned to in the last 5 year and which are relevant to the doctiral programme	MZOS no. 128-1201785-2228 „Method development for mesuaring area of a printing forms“ MZOS no. 128-1281957-1958 „Digitalization of a museum painting heritage“ Bilateral project with Slovenia ‘Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing” since 2010.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	O. Brajnović, "Adjustment of fotopolymer printing plate to meet qualitative requirements“ Master's degree thesis, Faculty of Graphic Arts, Zagreb, (2011).

Name	**Nikola Mrvac**
Short CV	Professor Nikola Mrvac, PhD was born on 28 May 1969. in Desni Srediček. He completed hie elementary education in Lasinj and graduated from Graphics high school in Zagreb. In 1994 he graduated from the Faculty of Graphic Arts University of Zagreb, Department of Printing. In 2001. he completed his Master’s Degree, entitled ‘’Typography development in multimedia society’’, at the Faculty of Organization and Informatics in Varaždin. He completed his doctoral thesis, entitled ‘’Synthesis of interactions of selected graphic reproduction parameters“ in 2003 at the Faculrty of Graphic Arts at the University of Zagreb and consequently was awarded a PhD degree in the field of graphic technology. After his studies he worked as a graphic arts teacher at the Graphics School in Zagreb in 1994, but in the same year he started working at the Faculty of Graphic Arts in Zagreb, Department of Printing, where he has been a full-time professor ever since. As a research associate and project leader he has been appointed to the following projects, which are an integral part of the National Science Research Programme of the Ministry of science and technology: 1999.- 2002. *Influence of printing techniques and graphic materials on paper reycling efficiency”*, 2002. -2006. *"Specification of paper features and fomulations for digital printing and its recycling“* 2007. - *"A study of technological factors in graphic design for systematic quality improvement“* as an associate in 2007. - *„Evaluation of quantitative and qualitative graphic reproduction process criteria“* as project leader. In 2012, he was appointed research fellow and in 2013 a full-time professor. The quality of his teaching is best demonstrated by his numerous memberships and engagement in faculty teaching boards and associations. (Committee for e-learning strategies, University of Zagreb, Committee for e-learning, Committee for learning and graduate exams at the University of Zagreb). He won the annual award of The society of university teachers, scholars and other scientists for the 2000/2001 academic year in the field of graphic technology, technical sciences. He contributed greatly to creation of a new study programme which was consistent with Bologna regulations. The study programme of Graphic technology university study at the Faculty of Graphic Arts in Zagreb was based on the programme draft proposition written by Nikola. Furthermore, he is one of the coauthors of vocational study programme ‘’Multimedia, design and application’’ of Vocational studies in Varaždin. The same programme was accepted by the Faculty of Graphic Arts in Kiseljak, University of Travnik. He cooperated with both institutions for the purposes of higher educational system improvement and study programme adjustment to the up-to-date programme propositions. On the national level, he has been a member of National Council for Curriculum and Assesment and Technology and Informatics Working group. He is included in major decisions on study prugrammes as well as document drafting for the purposes of successful programme delivery. He is the chair of Vocational Education Council and the author of methodology of EVALUS system and EVA software (skill management and evaluation systems). Furthermore, his work activities have been actively

	promoting work and education in graphics. Until now he has published around 80 research papers (chapters, science journals, collection of papers, and so on).
Date of last academic appointment to the teaching and research position	Full professor on 12 February 2013
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	**Papers published in journals and present in CC (Current Contents), SCI (Science Citation Index), SCI – Expandedu** **11)** Skala, Tibor; Tomašić, Ivan; Mrvac, Nikola; Statistička simulacija protoka čestica kroz netkanu strukturu. // Časopis za tekstilnu tehnologiju i konfekciju. 59 (2010), 6.; 221-227. (SCI-Expanded) **12)** Mrvac, Nikola; Tomiša, Mario; Milković, Marin, Developing a modern model of higher education. // Technics Technologies Education Management. 5 (2010), Number 4, 2010; 700-709. (SCI-Expanded) **13)** Milković, Marin; Mrvac, Nikola; Matijević, Mile; Evaluation of the chromatic assimilation effect intensity in Munker-White samples made by standard methods of rendering. // Tehnički vjesnik, 17 (2010), Number 2; 163-172. (SCI-Expanded) **14)** Vusić, Damir; Mrvac, Nikola; Milković, Marin; The neon colour spreading effect in various surround ambient conditions. // Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku. 18 (2011) Number 4 219 -225. (SCI-Expanded) **15)** Vusić, Damir; Milković, Marin; Mrvac, Nikola; The Influence of the Primary Color Stimuli Selection on the Neon Color Spreading. // *TTEM - Technics Technologies Education Management*. 7 (2012) , 1; 81-87 (SCI-Expanded) **16)** Tomiša, Mario; Mrvac, Nikola; Milković, Marin; Determination of Graphic Design Qualitative Criteria. // *TTEM - Technics Technologies Education Management*. 7 (2012.) , 1; 49-56 **17)** Milković, Marin; Mrvac Nikola; Vusić Damir; Evaluation of the chromatic adaptation effect intensity by "tuning" the desaturated achromatic reproductions printed in the offset. // *Tehnički vjesnik*. 18 (2011) , 4; 519-528. (SCI-Expanded) **18)** Milković, Marin; Mrvac, Nikola; Matijević, Mile. Evaluation of the effect of retinal localized chromatic adaptation intensity on desaturated achromatic reproductions derived by standard rendering methods. // *Color Research & Application*. (2012). (CC) **19)** Milković, Marin; Mrvac, Nikola; Zjakić, Igor. Comparative Analysis of the Intensity of the Induction and Assimilation Effects of the Equivalent Geometric Structures of Graphic Reproductions. // *TTEM - Technics Technologies Education Management*. 7 (2012) 2; 905 – 913 **20)** Milković Marin; Matijević Mile; Mrvac Nikola. Intensity evaluation of the spreading and simultaneous contrast effects based on the dotted White's samples. // *Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku*. 19 (2012) , 3; 521-529 **Papers published in journals present in other significant bibliographic databases** **8)** Skala, Tibor; Todorovac, Mirsad; Mrvac, Nikola; Technical Analysis of Analogies of Stereo Displaying Techniques with 3D Generated Scenes in Visualitization // DAAAM International Scientific Book 2008 / Katalinic, Branko (ur.).Vienna : DAAAM International, 2008. Str. 789-796. (INSPEC) **9)** Milkovic, Marin; Mrvac, Nikola; Bolanca, Stanislav; Evaluation of the Chromatic Induction Intensity on Munker-White Samples // DAAAM International Scientific Book 2008 / Katalinic, Branko (ur.). Vienna : DAAAM International, 2008. Str. 485-498. **10)** T. Skala, N. Mrvac, M. Mikota & I. Pavlović, *Multimedia Image rendering*

on a distributed computer system, DAAAM international scientific book 2008, Katalinić, Branko (ur.), DAAAM International Vienna, Vienna 2008, 781-788 (INSPEC)

11) Skala, Tibor; Muža, Robert; Mrvac, Nikola; Render Settings Impact Analyses on Quality of Complex 3D Graphic Structure // DAAAM International Scientific Book 2010 / Katalinic, Branko (ur.). Vienna : DAAAM International, 2010. Str. 863-872.

12) Skala, Tibor; Jelić, Antonija; Mrvac, Nikola; Movement problems of solid object in 3D computer animation // DAAAM International Scientific Book 2010 / Katalinić, Branko (ur.). Vienna : DAAAM International, 2010. Str. 631-638.

13) Matijević, Mile; Mrvac, Nikola; Milković, Marin; Vusić, Damir; Evaluation of Percepcion of Red Color Applied to Koffka Effect // DAAAM International Scientific Book 2010 / Katalinic, Branko (ur.). Viena : DAAAM International, 2010. Str. 259-270.

14) Tomasegovic, Tamara; Zitinski Elias, Paula Yadranka; Baracic, Marina; Mrvac, Nikola; E-learning and Evaluation in Modern Educational System. // US-China Education Review. Vol. 8 (2011) , No. 2; 198-203

Scientific paper reviewed, published in international conference proceedings

19) Babić, Nikša; Pibernik, Jesenka; Mrvac Nikola; Media Study : Motion Graphics // Proceedings of the 50th International Symposium : ELMAR-2008 ; sv. 2 / Grgić, Miroslav ; Grgić Sonja (ur.). Zagreb : ELMAR, 2008. 499-503

20) Mikota, Miroslav; Pavlović, Ivana; Mrvac, Nikola; Influence of the printing technique on the quality of the digitally shot colour portrait // Proceedings, 19th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Next Generation of Intelligent Systems and Solutions" / Katalinić, Branko (ur.). Vienna : DAAAM International, 2008. 863-864

21) Skala, Tibor; Mrvac, Nikola; Todorovac, Mirsad; Koren, Antun; Improving the Quality of Education by Using 3D visualisation Methods // 12th International conference of printing, design and graphic communication Blaž Baromić '08 : proceedings / Zdenka, Bolanča (ur.). Zagreb ; Ljubljana ; Senj : Faculty of Graphic Arts ; Faculty of Natural Science and Engineering, Pulp and Paper Institut ; Matica hrvatska, Ogranak, 2008. 187-191

22) Valpotić, Željko; Zjakić, Igor; Mrvac, Nikola, Criterion Evaluation of Qualitative Characteristics of the Contemporary Offset Printing // Proceedings / 12th International conference of printing, design and graphic communication Blaž Baromić / Bolanča, Zdenka (ur.). Split, Hrvatska : University of Zagreb, Faculty of Graphic Arts, Croatia University of Ljubljana, Faculty of Natural Science and Engineering, Slovenia Ogranak Matice hrvatske Senj, Croatia Pulp and Paper Institute, Ljubljana, Slovenia, 2008. 201-211

23) Bozic, Tomica; Matijevic, Mile; Mrvac, Nikola; Pavlović, Ivana; Changes in the Company Multimedia Environment // Blaž Baromić 09 / Bolanca, Zdenka (ur.). Zagreb : Grafički fakultet u Zagrebu, 2009. 201-204

24) Kovačić, Anja; Matijević, Mile; Mrvac, Nikola; Milković, Marin; Evaluation of the Influence of the Background Colour on the Perception of the Stimulus Contrast // 20 th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Theory, Practice and Education" / Katalinić, Branko (ur.). Vienna : DAAAM International, 2009. 1239-1240

25) Matijevic, Mile; Mrvac, Nikola; Milkovic, Marin, Pavlović, Ivana; Mikota, Miroslav; Evaluation of the Perception of Stimulus Contrast in Light Tones of Additive Synthesis // 20 th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Theory, Practice and Education" / Katalinić Branko (ur.). Vienna : DAAAM International, 2009. 1863-1864.

26) Pavlović, Ivana; Mikota, Miroslav; Mrvac, Nikola; Exposure Correction in Digital Portrait Photography Taken with the Nitraphot Lighting // DAAAAM Symposium "Inteligent Manifacturing & Automation : Focus on Theory,

	Practice and Education" / Katalinić, Branko (ur.). Vienna : DAAAAM International, 2009. 1449-1450 **27)** Pavlović, Ivana; Mikota, Miroslav; Matijević, Mile; Mrvac, Nikola; Analyzes of the Changes on the Photographic Illustration Realized Throught Electrophotographic Printing // Proceedings of 5th International Symposium on Novelties in Graphics. Ljubljana : Univerza Ljubljana, 2010. 786-790. **28)** Zitinski Elías, Paula Yadranka; Baracic, Marina; Tomasegovic, Tamara; Mrvac, Nikola. E- learning and Evaluation in Modern Educational System, // Proceedings of INTED2010 Conference. Valencia, 2010. 1152-1157 **29)** Mrvac, Nikola; Tomiša, Mario; Milković, Marin; Vusić, Damir; Primjena web 2.0 alata u edukaciji tehničke struke // Proceedings Book 11th International Foundrymen Conference / Unkić, Faruk (ur.). Sisak : Faculty of Metallurgy University of Zagreb, 2011. 184-191 **30)** Mrvac, Nikola; Vreto; Sanjin, Primjena e-učenja u multimedijskom okruženju // Proceedings of the 2nd International scientific and professional conference of graphic technology and design / Babić, Darko (ur.). Kiseljak : Univerzitet u Travniku, Fakultet za tehničke studije, 2011. 203-215 **31)** Vusić, Damir; Milković, Marin; Mrvac, Nikola; Percepcija boje u cross-media komunikacijskim sustavima // *Tiskarstvo 2012 & Design* / Žiljak, Vučić, Jana (ur.). Zagreb : FS, FotoSoft, ADAM-KAJ, 2012. 27-34 **32)** Tomić Gorana; Mrvac Nikola; Matijević Mile; Kozina Goran; Elektronsko izdavaštvo – budućnost časopisa // *16. međunarodna konferencija tiskarstva, dizajna i grafičkih komunikacija Blaž Baromić - Zbornik Radova* / Mikota, Miroslav (ur.) **33)** Tomaš, Ante; Mrvac, Nikola; Vrtlar, Fabijanko; Borković, Jakov; Principi uštede u novinskom tisku // *Zbornik radova - Matrib 2012* / Alar, Željko ; Jakovljević, Suzana (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2012. 337-342 **34)** Tomaš Ante; Mrvac Nikola; Schreiber Zdeslav; Emarcora Karlo; Oblikovanje modela normiranja vremena tiska i potrošnje papira u novinskoj proizvodnji // *16. međunarodna konferencija tiskarstva, dizajna i grafičkih komunikacija Blaž Baromić - Zbornik radova* / Mikota, Miroslav (ur.). Zagreb : Hrvatsko društvo grafičara, Hrvatska, 2012. 402-408 **35)** Čačić, Marko; Mrvac, Nikola; Matijević, Mile; Milković, Marin; Tomiša, Mario; Korisnička sučelja u web 2.0 okruženju // *Zbornik radova - MATRIB 2012* / Alar, Željko ; Jakovljević, Suzana (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2012. 42-49 **36)** Bevanda Ana; Mrvac Nikola; Matijević Mile; Utjecaj simultanog kontrasta na percepciju otiska // *16. međunarodna konferencija tiskarstva, dizajna i grafičkih komunikacija Blaž Baromić - Zbornik radova* / Mikota, Miroslav (ur.). Zagreb : Hrvatsko društvo grafičara, Hrvatska, 2012. 180-189
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	**Project leader**: "Quantum and quality evaluation criteria of graphic reproduction" code: 128-1281955-1960, National Scientific Research Program MZOS. **Associate** – 2007. - „Technological factors of graphic design study for systematic quality improvement" project code: 128-1281955-1962, principal researcher: Full professor Stanislav Bolanča, PhD.
Number of successful supervision undertakings which resulted in completion of doctoral thesis	**4** 5. Skala, Tibor, Učinkovitost postupka generiranja grafičkih sadržaja na raspodijeljenim računalnim sustavima / doktorska disertacija. Zagreb : Grafički fakultet, 26.02. 2010, 228 str. Voditelj: Mrvac, Nikola ; Divjak, Saša. 6. Tomiša, Mario, Određivanje kvalitativnih kriterija dizajna grafičkoga proizvoda u procesu grafičke komunikacije / doktorska disertacija, Zagreb: Grafički fakultet, 22.03. 2012., 122 str. Voditelj: Mrvac, Nikola. 7. Vusić, Damir, Efekt neonskoga proširivanja boje u procesu grafičke

	reprodukcije / doktorska disertacija. Zagreb : Grafički fakultet, 22.03. 2012, 166 str. Voditelj: Mrvac, Nikola. 8. Matijević, Mile,
Name	**Branka Lozo**
Short CV	Born on November 1st, 1961 in Zagreb, maiden name: Vodopija Education: Classical Grammar School in Zagreb, year of graduation: 1980, Foreign languages: English, Italian, French Faculty of Graphic Arts University of Zagreb, year of graduation: 1986, Rector's Award in 1985, completed Mater's degree, entitled: Contribution to paper quality optimization, supervisors: A. Golubović I Z. Bolanča, completed doctoral thesis in 2005: ''The stability of Ink Jet prints studied by non-destructive methods'', supervisors: T. Muck I N. Knešaurek Work experience and appointments to teaching and research positions: Assistant and senior assistant until 2006, assistant professor until 2011, associate professor Appointments to science positions: Research associate in 2006, senior research associate in 2010, research fellow in 2011. Scientist's Identification Number and bibliography: 172126, http://bib.irb.hr/mzos/lista-radova?autor=172126 Training: Helsinki University of Technology: Raman i UV Raman spectroscopy, FTIR 2005. Norwegian University of Technology and Science, Trondheim: SEM i LM, microscopy, 2005. Naravoslovno-tehniška fakulteta Univerze v Ljubljani: 3D InkJet Printing, academic year 2006./2007. Centre Technique du Papier, Grenoble: Deinking floatation of flexo and flexo-improved prints, ERIC, 2006 Naravoslovno-tehniška fakulteta Univerze v Ljubljani: Chromogenic colour print Project leadership: National project, Ministry of science, education and sports (MZOS): Innovative graphic materials, 2008/13 Bilateral project, Croatian-German: Treatments of Fiber-based Materials for Improved Food Packaging, 2013 Bilateral project, Slovenian- Croatian, New graphic applications with chromogenic printing inks, 2011/12. ac. year Grant holder for the Faculty of Graphic arts for Cost FP 1104 New possibilities for print media and packaging - combining print with digital, 2012/16. ac. Year Other international projects: Croatian coordinator at Cost FP 1003: Impact of renewable materials in packaging for sustainability –Development of renewable fibre and bio-based materials for new packaging applications, 2010/2014. Cost E48: The Limits of Paper Recycling, 2004/2008 Cost E46: Improvements in the Understanding and Use of De-inking Technology, 2004/2008 Cost E32: Characterisation of Paper Surfaces for Improved Paper Grades, 2003/2007 Teaching: Undergraduate, graduate and postgradute study at the Faculty of Graphic Arts University of Zagreb, courses taught in Croatian and English. She was supported by the University of Zagreb for delivery of The History of Printing course in a foreign language in 2011; currently acting as a supervisor Naravoslovno-tehniškoj fakulteti Univerze v Ljubljani, doctoral study, currently acting as a supervisor Supervisions of completed doctoral thesis

	M. Stanić, 2010, first doctoral thesis written and completed in English language at the Faculty of Graphic Arts S. Jamnicki, 2001 Memberships and duties: Principal committee for the discipline of technical sciences – field of chemical engineering, mining, oil and geological engineering, metalurgy, textile technology and graphic technology, 2013/2017. Board of Directors at European Fiber and Paper Research Organisation, EFPRO, 2012/2015 Croatian standards institute, Technical committe 6 for paper and pulp CEN - European Committee for Standardisation TC 172 The Society for Imaging Science and Technology, USA Project reviews for European Science Foundation, 2010 Editorial board of journal Celluloza si Hartie, Braila, Romania Editorial board of journal Acta Graphica, Zagreb, Croatia Publication Chair za NIP/DF Conference, Seattle, Washington, 2013 Program Chair for Special papers za NIP/DF Conference, Quebec, Canada, 2012 Program Chair for Europe and Middle East za NIP/DF Conference, Minneapolis, Minnesota, 2011 Organisation for guest lecturer Mr Steve Simske HP Labs, USA at the Faculty of Graphic Arts, 2012 Organisaton of international PhD student workshop: COST Training school: New Technologies fortreatments in the end-of-use of packaging materials, Faculty of Graphic Arts, 2011 Organisational board of International workshop COST Strategic Workshop: The Future Needs of the Paper Industry, u sklopu CEPI Paper Week, Brussels, Belgium, 2009 Organisation of INGEDE seminar and lecture by Mr Andreas Faul at the Faculty of Graphic Arts in Zagreb, 2008 Organisation of bilateral Croatian-Slovenian student seminar: Zero.99 Non-Stop Student Seminar at the Faculty of Graphic Arts, 2008 Organisation of presentation of 3D Ink Jet print Z-Corp i Ib-Procadd d.d. , Zagreb, Mimara Museum, 2007 Organisation of COST E48 The Limits of Paper Recycling project converence, Zagreb, Hotel Palace, 2006
Date of last academic appointment to the teaching and research position	**14 February 2011, associate professor**
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	**Müller, Günter; Hanecker, Elisabeth; Blasius, Kai; Seidemann, Constanze; Tempel, Lydia; Sadocco, Patrizia; Ferreira Pozo, Beatriz; Boulougouris, Georgios; Lozo, Branka; Jamnicki, Sonja; Bobu, Elena: End-of-Life Solutions for Fibre and Bio-Based Packaging Materials in Europe, Packaging Technology and Science. 26 (2012), 7; 09-11-2012-1-15** **Levlin, J-E; Grossmann, H; Read, B; Ervasti, I; Hooimeijer, A; Lozo, B; Sain-Armand, J; Cochaux, A; Faul, A; Ringman, J; Stawicki, B; Bobu, E; Miranda, R; Blanco, A; Stanić, M: The Future of Paper Recycling in Europe: Opportunities and Limitations, G. Manchester, PITA, 2010.** **Jamnicki, Sonja; Pèlach Serra, Maria Àngels; Lozo, Branka; Stanić, Maja; Barušić, Lidija: Deinking flotation of recycled linerboard for food packaging applications, Cellulose chemistry and technology. 44 (2010), 10; 481-488** **Branka Lozo, Ivana Bolanča, Zdenka Bolanča, Damir Modrić; Recycled paper – the influence of digital prints, Drvna industrija, 53, 4 (2005), 203 – 210**

	Stawicki, Bartek; Lozo, Branka; Lajić, Branka: Energy Management Guidelines in Pulp and Paper Production, Cellulose chemistry and technology. 44 (2010), 10; 521-530
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	**National project MZOS: Innovative graphic materials, 2008/2013.** **Bilateral german-croatian: Treatments of Fiber-based Materials for Improved Food Packaging, 2012/2013** **Bilateralni slovenian-croatian: New graphic applications with chromogenic printing inks, 2011/2012** **Grant holder for institution of Faculty of Graphic Arts for Cost FP 1104 New possibilities for print media and packaging - combining print with digital, 2012/2016** **Croatian coordinator in Cost FP 1003: Impact of renewable materials in packaging for sustainability –Development of renewable fibre and bio-based materials for new packaging applications, 2010/2014** **Croatian coordinator in Cost E48: Limits of Paper Recycling, 2004/2008** **Croatian coordinator in Cost E46: Improvements in the Understanding and Use of De-inking Technology, 2004/2008**
Number of successful supervision undertakings which resulted in completion of doctoral thesis	**2 supervisions of successfully completed doctoral studies:** **M. Stanić: Verification of methods in the analysis of structure, surface and permanence of 3D Ink Jet printing materials; 23 November 2010, the first dissertation written and defended in English at the Faculty of Graphic Arts:** **S. Jamnicki: Evaluacija prikladnosti različitih klasa recikliranih papira za izradu zdravstveno ispravne prehrambene ambalaže; 27 April 2011**
Name	***Diana Milčić***
Short CV	Diana Milčić graduated at the Faculty of Mechanical Engineering and Naval Architecture in 1989 at the study course of mechanical engineering, programme type Mechanical Engineering Constructions. Upon completion of studies, Diana worked at „Končar – Generatori“ in generator constructions using programme package CADDS Computervision. From 1 March 1993 to 1 June 1994 she worked at the Faculty of Mechanical Engineering and Naval Architecture as part-time research assistant at the Department of elements of machines and constructions. From 1 June 1994 to 1 October 1996 she worked at „TKT-Toplota“ in construction and management of production. From 1 October 1996 to 1 February 2002 she worked at the Faculty of Mechanical Engineering and Naval Architecture on a research project „Dynamical analysis, synthesis and control of complex movements of biomechanic and technical systems“ Since 1 February 2002 she has worked at the Faculty of Graphic Arts. In 1997 Diana earned her Master's degree at the Faculty of Mechanical Engineering and Naval Architecture, and she earned her PhD degree in May 2001, also at the Faculty of Mechanical Engineering and Naval Architecture at the University of Zagreb. Diana is project leader of „Standardisation of ecologically acceptable processes of graphic communications“ 128-1281955-1951, funded by the Ministry of science, education and sports. Diana collaborated in the realisation of a bilateral project „Electrochemical testings and corrosion resistance of aluminium and its oxides and application in

	print form for planographic printing „
Date of last academic appointment to the teaching and research position	Full professor since 9 June 2009.
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	8. Donevski, Davor; Milčić, Diana; Šarčević, Iva, Assessing RGB Device Calibration Control Level, Tehnicki Vjesnik 19 (2012), 1; 607-610 9. Milčić, Diana; Vučina, Adisa; Donevski, Davor,Packaging Model in Graphic Industry, 15th International Research/Expert Conference "Trends in the Development of Machinery and Associated Technology" (2011), S. Ekinović, Y. Uctug, J. V. Calvet (ur.). Prag, (2011) 1-6 10. Donevski, Davor; Milčić, Diana; Banić, Dubravko, Effect of data scaling on color device model fitting, Journal of Industrial Engineering and Management. 3 (2010) 399-407 11. Milčić, Diana; Banić, Dubravko; Donevski, Davor, Application of Logistics Methods in Print Production, Proceedings ICIL'2010 / Fogliatti de Sinay, Maria Cristina ; Fae, Maria Ines; Canen, Alberto G. (ur.), Rio de Janeiro, 2010. 12. Donevski, Davor; Milčić, Diana; Banić, Dubravko, Increasing the Accuracy of Colour Reproduction System Evaluation by Proper Sampling, Acta graphica. 22 (2010) 3-4; 1-5 13. Donevski, Davor; Milčić, Diana; Banić, Dubravko, Model for Implementing TQM in the Graphic Arts Industry, Tehnički vjesnik. 16 (2009) , 1; 31-34 14. Milčić, Diana; Donevski, Davor; Banić, Dubravko, Integrirani sustavi upravljanja u grafičkoj industriji, Poslovna izvrsnost. 2 (2008), 1; 63-71
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	She is leader of the national scientific project „Standardisation of ecologically acceptable processes of graphic communications" 128-1281955-1951., 2007 - ongoing National scientific project „ Threedimensional virtual applied atropology" 120-1962766-3109., 2007 - ongoing Bilateral slovenian-croatian „Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing" 2010/2011
Number of successful supervision undertakings which resulted in completion of doctoral thesis	3. Davor Donevski 4. Daria Mustić
Name	***Jesenka Pibernik***
Short CV	Prof. Jesenka Pibernik, PhD, graduated at the Faculty of Architecture at the University of Zagreb in 1985. She earned her Master's degree in 1992 in USA, University of Texas at Austin (supervisor: Charles Moore, AIA). After graduation she stayed in USA and was a contracted worker on several architecture projects. Since 1995 she has lived in Zagreb. Professor Jesenka was awarded several architecture awards and recognitions in architecture competitions and her work was displayed at several exhibitions, at Zagreb Salon, amongst other. In 1998, after one-year part-time job, Jesenka was employed at the Faculty of Graphic Arts at the University of Zagreb. She earned her PhD degree in 2003 at the Faculty of Architecture at the University of Zagreb. She co-authored the university coursebook „Digital space design" published by Croatian University Press. Jesenka teaches at undergraduate, graduate and postgraduate levels at the Faculty of Graphic Arts at the University of Zagreb within the Department of Art History and Graphic Design and she also holds the position of Dean of Finance and General Affairs. Jesenka has participated actively in several research projects in Croatian, in an EU-funded project within the COST program, as well as in a project within the

	framework of Science and Innovation Investment Fund. Her professional interests include: graphic design, web design, mobile graphics, design of communication services for people with complex communicational needs, user experience.
Date of last academic appointment to the teaching and research position	associate professor since 14 March 2010
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	7. Pibernik, J.; Dolić J., Kanižaj, B.: „What is creativity in web portfolio design“ Digital Creativity 2013 (CC) 8. Dolić, J., Pibernik J., Car Ž. : Design and Developement of Symbol Based Services for Persons with Complex Communication Needs Acta Graphica 24 (2013) 1-2, (INSPEC) 9. Pibernik J.; Dolić J.; Dilberović I.: „Proces dizajna T-majica tehnikom digitalnog tiska na tekstilu“. Tekstil : časopis za tekstilnu tehnologiju i konfekciju. 60 (2011) , 10; 504-511 „T-shirt design process by digital direct printing technique“ Textile: Journal for textile technology and clothing. 60 (2011), 10; 504-511 10. Pibernik, J.; Brozović M.; Dolić J. „Percepcija eko tema u dizajnu modne odjeće za mlade“ Tekstil 1-2 vol. 58 (2009), str. 1-10 (SCI) „Perception of eco-matters in designing fashion wear for the young“ Textile 1-2 vol. 58 (2009), str. 1-10 (SCI) 11. Brozović, M.; Pibernik, J.; Banić, D. „Quality of Color Lightness Reproductions“. Journal of Imaging Science and Technology 52 (2008), 6; 060507-1-060507-8 (CC). 12. Pibernik J.: „Digitalna reprezentacija prostora i vremena u procesima globalizacije“, Društvena istraživanja: časopis za opća društvena pitanja 74 (2004), 6; UDK 1:3/33 ISSN, 1330-0288 (CC).
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Scientific projects 1. Project „Quantum and quality evaluation criteria of a graphical reproduction“ MZOS no. 128-1281955-1960, project leader Nikola Mrvac 2. Project “ICT systems for persons with complexed communicational needs”, financed from University development fund in Zagreb. 3. COST projekt Action IC1003: European Network on Quality of Experience in Multimedia Systems and Services (QUALINET) domain: Informational and communicational technologies. 4. Projekt EuropeAid/131920/M/ACT/HR, Science and Innovation Investment Fund Grant Scheme, Title: „ICT Competence Network for Innovative Services for Persons with Complex Communication Needs“
Number of successful supervision undertakings which resulted in completion of doctoral thesis	Nikola Djurek: „Study of the technology of development, readability and aesthetics of the Croatian script“, 2009
Name	***Nina Knešaurek***
Kratki životopis	Nina Knešaurek was born in Zagreb where she attended elementary and secondary school. After high school she enrolled to the Faculty of Technology at the University of Zagreb, having graduated in 1977. At the same faculty, she was admitted to postgraduate study. With her Master's thesis “Color study in graphic reproduction“ she earned her Master's degree in 1985 supervised by prof. Dorotheja Turkalj, PhD. Her doctoral dissertation, under supervision of prof. Dorotheja Turkalj, PhD, earned her a PhD degree in 1998 at the Faculty of Chemical Engineering and Technology at the University of Zagreb.
Date of last academic appointment to the teaching and research position	18 October 2010

List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1.Kulčar,Rahela; Friškovec, Mojca;Klanjšek Gunde, Marta; Knešaurek, Nina **Dynamic colorimetric properties of mixed thermochromic printing inks**.// Coloration technology.127 (2011), 6; 411-417 2.Kulčar,Rahela; Klanjšek Gunde, Marta; Knešaurek,Nina. **Dinamic Colour Possibilities and Functional Properties of Thermochromic Printing Inks**. // Acta graphica :revija za grafičku tehnologiju, inženjerstvo i dizajn. 23 (2012) ; 25-36 3. Mikota,Miroslav; Knešaurek, Nina; Kulčar,Rahela. **Analiza pristupa kataloškoj fotografiji tkanina s efektom sjaja.** // Tekstil : časopis za tekstilnu tehnologiju i konfekciju. 59 (2010), 3 ; 80-85 4. Kulčar, Rahela; Friškovec, Mojca; Klanjšek Gunde, Marta; Knešaurek, Nina. Colorimetric properties of UV-thermochromic inks // *13th International Conference on printing, design and graphic communications, Blaž Baromić, Proceedings,* Zagreb : Zagreb: Faculty of Graphic Arts ; Ljubljana: Faculty of Natural Science and Engineering ; Senj: Matica hrvatska, Ogranak ; Ljubljana: Pulp and Paper Institut, 2009. 89-93 5. Kulčar, Rahela; Friškovec, Mojca; Klanjšek Gunde, Marta; Knešaurek, Nina; Lozo, Branka. Some experimental properties on reversibility of leucodye thermochromic inks // *Conference Proceedings, 9th Seminar in Graphic Arts*. Pardubice, 2009. 48-53 6. Kulčar, Rahela; Friškovec, Mojca; Knešaurek, Nina; Sušin, Barbara; Klanjšek Gunde, Marta. Colour changes of UV-curable thermochromic inks // *Proceedings of the 36th International Research Conference of iarigai, Vol.XXXVI*, Darmstadt, Germany : Sveučilišna tiskara, Zagreb, 2009. 429-434
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Project code:P1-0030 (D),L2-1097 (D).Principal researchers: Marta Klanjšek Gunde, Branka Lozo. Project title**: New graphic applications with chromogenic printing inks**. Kemijski inštitut, Ljubljana Faculty of Graphic Arts, Zagreb
Number of successful supervision undertakings which resulted in completion of doctoral thesis	Branka Lozo – **A study of Ink jet print stability by nondestructing methods**, Faculty of Graphic Arts (2005) co-supervisor Ivana Bolanča Mirković **– Ecologically more favourable offset ink and printing deinking mechanisms,** Faculty of Graphic Arts (2007) co-supervisor Rahela Kulčar – **Colorimetric analysis and stability parameters of UV-thermochromic colors**, Faculty of Graphic Arts (2010) co-supervisor
Name	***Lidija Mandić***
Short CV	Lidija Mandić, PhD, is associate professor at the Department of Reproduction Photography at the Faculty of Graphic Artls. Lidija graduated, earned her master's degree and earned her PhD degree in 2007 at the Faculty of Electrical Engineering and Computing. The area of her research and teaching interests are color management systems, image display models, color display models, testings of all types of screens and application of new technology in graphic process. Lidija was an external associate at the Ministry of science project 0036015 *"Multimedia communication systems"*, and today she is an associate at the project 036-0361630-1635 *"Quality management of image in radiofusion of digital video*

	signal" She is project leader of project code 128-1281957-1958 *"Digitalisation of museum painting heritage"*. She is deputy project leader in projects funded by the Fund for University development: *„Excellence centre for computer vision"* and *„ICT systems for people with complex communication needs"*. Lidija is program coordinator of CEEPUS program CIII-RS-0704-01-1213 „Research and education in the field of Graphic Engineering and Design". She is also team leader at the Faculty of Graphic Arts on an IPA project ICT Competence Network for Innovative Services for Persons with Complex Communication Needs. Lidija authors 5 papers in CC and SCI journals, 3 papers in other journals, 59 papers in international scientific conference proceedings. She has been a member of editorial staff of Acta Graphica (HR) since 2009. She is also a reviewer at:IJECES-International Journal of Electrical and Computer Engineerinf Systems, JIE-Journal of Electronic Imaging, Tehnički vjesnik, Tekstil, Acta Graphica, conferences: ISPA i IEEE ICIP.
Date of last academic appointment to the teaching and research position	20 May 2013 – associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	Lidija Mandić, Sonja Grgić, Mislav Grgić, Influence of background and surround on image color matching, *International Journal of Imaging Systems and Technology,* Volume 17, Issue 4, Pages 244-251, 2007 Strgar Kurečić, Maja; Agić, Darko; Mandić, Lidija, *Digitalni fotografski sustav za vjernu reprodukciju boja različitih materijala, Tekstil : Časopis za tekstilnu tehnologiju i konfekciju*. 57 (2008) ; 623-631 Poljičak, Ante; Mandić, Lidija; Agic, Darko, *Robustness of a DFT Based Image Watermarking Method Against AM Halftoning*, *Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku*. 18 (2011) , 2; 161-166 Strgar Kurečić, Maja; Agić, Darko; Mandić, Lidija, *Developing a custom colour target for artwork imaging, Imaging science journal*. 59 (2011) , 6; 317-331 Poljičak, Ante; Mandić, Lidija; Agić, Darko, *Discrete Fourier transform–based watermarking method with an optimal implementation radius, Journal of electronic imaging*. 20 (2011) , 3; 033008-1-033008-8 Mandić, Lidija; Strgar Kurečić, Maja; Poljičak, Ante; Agić, Darko, Changes in Perception of Colorimetric Differences Caused by Different Backgrounds, *Proceedings of the 53rd International Symposium ELMAR-2011*
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	"Management of a picture quality in radiodiffusion of a digital video signal" code. 036-0361630-1635, Ministry of Science, Croatia (2007) Digitalization of museum painting heritage (no. 128-1281957-1958) Ministry of Science, Croatia (2007) University development fund: "Excellence centre for computer sight" University development fund: "ICT systems for persons with complexed communicational needs" *IPA projekt ICT Competence Network for Innovative Services for Persons with Complex Communication Needs*
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1. Poljičak, Ante. *Protection of ownership of a reproduced image by insertion of digital watermark"*, Zagreb, Faculty of Graphic Arts, 30 June 2011
Name	***Igor Zjakić***
Short CV	Igor Zjakić graduated at the Faculty of Graphic Arts after completion of Graphic high school, programme type Printing. In 2000, he enrolled to postgraduate study at the Faculty of Graphic arts and in 2002 he became the first Master degree holder in Graphic technology in Croatia. In January 2005, he earned his doctoral degree at the Department of Printing at the Faculty of Graphic Arts, with a thesis

	entitled “Optimalisation of grating system reproduction in print”. Since 1993, he has been working at “Graf” as CEO, then in “AKD” as head of facilities and supervisor of technological processes as well as the CEO. He participated in the project for design of new Croatian passport and other protected documents. Until today, he has published more than 50 scientific and professional papers in Graphic technology, and has participated in many international and domestic professional conferences. He has authored several chapters published in international scientific books as well as several research papers in international journals with international review. In his 10-year experience in economy, he completed several courses related to graphic technology and management in Zurich, London and Budapest. For the last several years, he has been collaborating in the work of a scientific-professional conference “Blaž Baromić” as member of Program and Organisation Committee. He has also been a member of Program Committee of international conference DAAM headquartered in Wien, where he heads the part of “Graphic technology”. At German organization IFRA, he is advisor for matters of quality in paper print. He wrote the following textbooks in the area of graphic technology and design: “Offset print quality management”, “Colorimetry in multimedia systems” and “Psychology of colors”.
Date of last academic appointment to the teaching and research position	14 March 2011
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. Zjakić, Igor; Parac-Osterman, Đurđica; Irena; New approach to metamerism measurement on halftone color images, Measurement 44 (2011), p.p. 1441-1447. 2. Zjakić, Igor; Parac-Osterman, Đurđica, Bates, Glogar Martinia Ira; Influence of a textile structure on raster value increase in screen printing, Tekstil 60 (1). (2011), p.p. 1-8. 3. Zjakić, Igor; Bates, Irena; Milković, Marin. A Study of Dot Gain and Gamut for Prints Made With Highly Pigmented Inks, Technical Gazette 18, 2(2011), p.p. 227-235. 4. Martina Skenderović Božičević, Andreja Gajović, Igor Zjakić, Identifying a common origin of toner printed counterfeit banknotes by micro-Raman spectroscopy, Forensic Science International, 223 (2012) 314–320, 5. Milković, Marin; Mrvac, Nikola; Zjakić, Igor. Comparative Analysis of the Intensity of the Induction and Assimilation Effects of the Equivalent Geometric Structures of Graphic Reproductions, *TTEM - Technics Technologies Education Management*. Volume 7 (2012) , Nuber 2; 6. Bates, Irena; Zjakić, Igor; Milković, Marin. Lightfastness and weatherfastness of overprint pattern obtained on polymer substrates, *Tehnički vjesnik,* 18 (2011) , 3; 349-356 7. Markuš, Marko; Bertić, Irena; Zjakić, Igor. Application of web offset coldset black with variable content of vegetable oils, DAAAM International Scientific Book 2008, Katalinic, Branko (ur.). Vienna, Austria: DAAAM International, 2008. p.p. 449-462 8. Zjakić, Igor; Bertić, Irena; Novaković, Marijana. Metamerism Influence on the Printing Quality of Different Digital Offset Printing Techniques, DAAAM International Scientific Book 2008, Katalinic, Branko (ur.). Vienna, Austria: DAAAM

	International Vienna, 2008. p.p. 977-986.
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1. A study of technological graphic design factors for systematic quality improvement (128-1281955-1962) 2. Colors and inks in the process of an eco-friendly and sustainable development (117-1171419-1401)
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1

Table 2. Detailed list of supervisors	
Name	***Tadeja Muck***
Short CV	Associate professor Tadeja Muck, PhD, was born on 5 May 1971 in Brežice. She completed her elementary school in Sevnica and her high school in Celje in 1989. In the same year, she was admitted to the Department of Chemical Technology at the Naravoslovni tehnički fakultet in Ljubljana where she graduated in 1984. She completed her postgraduate study in paper restoration at the Faculty of Biotechnology, having defended her Master thesis in 1998. At the Naravoslovni tehnički fakultet, at the Department of Graphic and Information Technology, she defended her dissertation in 2002, with a topic: Interactions on paper surface with drop printing. In 2003, she was elected assistant professor. After completion of her studies, she spent one year working at the factory Radeče papir at the development of waterproof packaging. Fron 1996 to 1998 she was a Slovenska Znanstvena Fondacija scholar and she worked on *sinteza stilbenskog crnila sa polistilbena smrekove skore*. Until 1999 she worked as researcha assistant at the Faculty of Biotechnology, Department of Wood Chemistry. In the same year, she started working at the Institute for cellulose and paper in Ljubljana where she started working as seniour researcher II after the completion of her doctoral study. She was also a postdoctoral project leader: Development method for typographic paper analysis. Since 2004, she has been working at Naravoslovni tehnički fakultet, Department of Graphich and Information Technology as a lecturer in the field of: Graphic processes technology and standardisation, color management and interactive media. Her area of scientific research is investigation of interactions in print, printed electronics and image processing.
Date of last academic appointment to the teaching and research position	19 february 2009, associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	**Research papers** **1.** KAVČIČ, Urška, PAVLOVIČ, Leon, PIVAR, Matej, ĐOKIĆ, Miloje, BATAGELJ, Boštjan, MUCK, Tadeja. Printed electronics on recycled paper and cardboards = Tiskana elektronika na recikliranem papirju in kartonu. *Inf. MIDEM*, 2013, vol. 43, no. 1, str. 50-57, ilustr. http://www.midem-drustvo.si/Journal%20papers/MIDEM_43%282013%291p50.pdf. [COBISS.SI-ID 2869872] **2.** HLADNIK, Aleš, MUCK, Tadeja, STANIĆ, Maja, ČERNIČ, Marjeta. Fast Fourier transform in papermaking and printing: two application examples. *Acta polytech. Hung.*, 2012, vol. 9, no. 5, str. 155-166. http://www.uni-obuda.hu/journal/Hladnik_Muck_Stanic_Cernic_37.pdf. [COBISS.SI-ID 2826608] **3.** PAVLOVIĆ, Živko, MUCK, Tadeja, HLADNIK, Aleš, KARLOVIĆ, Igor. A comparative study of offset plate quality parameters using image processing and analytical methods. *Acta polytech. Hung.*, 2012, vol. 9, no. 6, str. 181-193. http://www.uni-

obuda.hu/journal/Pavlovic_Muck_Hladnik_Karlovic_38.pdf. [COBISS.SI-ID 2826864]
4. KÖNIG, Silva, GREGOR-SVETEC, Diana, HLADNIK, Aleš, MUCK, Tadeja. Assesing the lightfastness of prints by image chrominance histogram quantification. *J. imaging sci. technol.*, Nov./Dec. 2012, vol. 56, no. 6, str. 060507/1-060507/7, ilustr. [COBISS.SI-ID 2873712]
5. GREGOR-SVETEC, Diana, ROŽIĆ, Mirela, MUCK, Tadeja, LOZO, Branka. Natural zeolite as filler in base ink jet paper sheet. *Nordic Pulp and Paper Research Journal*, 2012, vol. 27, no. 4, str. 721-728. [COBISS.SI-ID 2799472]
6. KÖNIG, Silva, MUCK, Tadeja, GREGOR-SVETEC, Diana. The ageing resistance of offset and electrophotographic prints. *Nordic Pulp and Paper Research Journal*, 2012, vol. 27, no. 4, str. 739-749. [COBISS.SI-ID 2797168]
7. KAVČIČ, Urška, MAČEK, Marijan, MUCK, Tadeja, KLANJŠEK GUNDE, Marta. Readability and modulated signal strength of two different ultra-high frequency radio frequency identification tags on different packaging. *Packag. technol. sci.*, 2012, vol. 25, iss. 7, str. 373-384, ilustr. http://onlinelibrary.wiley.com/doi/10.1002/pts.988/pdf, doi: 10.1002/pts.988. [COBISS.SI-ID 4847386]
8. STAREŠINIČ, Marica, MUCK, Tadeja, STANIĆ, Maja, KLANJŠEK GUNDE, Marta. Development of image analysis procedures for evaluation of printed electronics quality = Razvoj metod slikovne analize za oceno tiskovne prehodnosti tiskane elektronike. *Inf. MIDEM*, mar. 2011, letn. 41, št. 1, str. 12-17. [COBISS.SI-ID 2585712]
9. KAVČIČ, Urška, MAČEK, Marijan, MUCK, Tadeja. Impact study of disturbance on readability of two similar UHF RFID tags. *Inf. MIDEM*, sep. 2011, letn. 41, št. 3, str. 197-201. [COBISS.SI-ID 2684528]
10. KÖNIG, Silva, MUCK, Tadeja, HLADNIK, Aleš, GREGOR-SVETEC, Diana. Recycled papers in everyday office use. *Nordic Pulp and Paper Research Journal*, 2011, vol. 26, no. 3, str. 349-355, ilustr. [COBISS.SI-ID 2597744]
11. KAVČIČ, Urška, MUCK, Tadeja, LOZO, Branka, ŽITNIK, Arjana. Readability of multi-colored 2D codes. *TTEM. Tech. technol. educ. manag.*, 2011, vol. 6, no. 3, str. 622-630, ilustr. http://www.ttem-bih.org/pdf/ttem_6_3_web.pdf. [COBISS.SI-ID 2673008]
12. BARBARIĆ-MIKOČEVIĆ, Željka, DŽIMBEG - MALČIĆ, Vesna, MUCK, Tadeja. Digital suplicator prints recycling possibilities. *Appita j.*, Jan/Mar 2010, vol. 63, no. 1, str. 45-52, ilustr. [COBISS.SI-ID 2351984]
13. KAVČIČ, Urška, MUCK, Tadeja, FRIŠKOVEC, Mojca. Ne le efektni tisk : 2D-kode, odtisnjene s termokromnimi tiskarskimi barvami. *Grafičar (Ljubl.)*, 2010, [Št.] 4, str. 14-17, ilustr. [COBISS.SI-ID 2428272]
14. KAVČIČ, Urška, MUCK, Tadeja, LOZO, Branka, ŽITNIK, Arjana. Multi-color 2D datamatrix codes with poorly readable colors. *JGED*, Nov 2010, vol. 1, no. 1, str. 1-8, ilustr. [COBISS.SI-ID 2476912]
15. KAVČIČ, Urška, MUCK, Tadeja, BRAČKO, Sabina, LOZO, Branka. Readability of processed digitally printed two-dimensional codes. *J. imaging sci. technol.*, May/Jun. 2010, vol. 54, no. 3, str. 030502/1-030502/6, ilustr. [COBISS.SI-ID 2370160]
16. JAVORŠEK, Dejana, MUCK, Tadeja. Defining the ink distribution in z-direction with SEM and CLSM. *Celuloză şi hărtie*, 2009, vol. 58, no. 2, str. 8-13, ilustr. [COBISS.SI-ID 2247536]
17. MAUKO, Alenka, MUCK, Tadeja, MLADENOVIČ, Ana. 3D visualization and quantification of bowing marble microstructure. *Constr. build. mater.*. [Print ed.], jun. 2009, vol. 23, iss. 6, str. 2380-2385, ilustr., doi: doi:10.1016/j.conbuildmat.2008.10.009. [COBISS.SI-ID 1464167]
18. MUCK, Tadeja, JAVORŠEK, Dejana, KREFT, Marko. Use of confocal microscopy as a nondestructive method in the study of ink jet dot formation. *J. imaging sci. technol.*, July/Aug. 2009, vol. 53, no. 4, str. 040201/1-040201/6, ilustr. [COBISS.SI-ID 2219888]
19. MAUKO, Alenka, MUCK, Tadeja, MIRTIČ, Breda, MLADENOVIČ, Ana, KREFT, Marko. Use of confocal laser scanning microscopy (CLSM) for the characterization of porosity in marble. *Mater. charact.*. [Print ed.], 2009, issue 7, vol. 60, str. 603-609,

	doi: doi:10.1016/j.matchar.2009.01.008. [COBISS.SI-ID 1469799] tipologija 1.08 -> 1.01 **20.** DEBELJAK, Mirica, MUCK, Tadeja, GREGOR-SVETEC, Diana. Evaluation of printability on synthetic papers printed by UV ink jet. *Nordic Pulp and Paper Research Journal*, 2009, vol. 24, no. 3, str. 313-318. [COBISS.SI-ID 2275440] **21.** DŽIMBEG - MALČIĆ, Vesna, BARBARIĆ-MIKOČEVIĆ, Željka, MUCK, Tadeja. Ovrednotenje recikliranja digitalnih odtisov z optičnimi metodami in s slikovno analizo = Recycling digital prints characterization with optical methods and image analysis. *Papir (Ljublj.)*, 2009, letn. 37, št. 2, str. 30-33. [COBISS.SI-ID 2310768] **22.** MAUKO, Alenka, MUCK, Tadeja, MLADENOVIČ, Ana, MIRTIČ, Breda. Uporaba konfokalne laserske mikroskopije za ugotavljanje poroznosti naravnega kamna na primeru kalcitnega marmorja = Porosity of natural stone and use of confocal laser scanning microscopy on calcitic marble aged in laboratory. *Geologija*. [Tiskana izd.], 2008, knj. 51, 1, str. 77-85. [COBISS.SI-ID 1551957] **23.** MUCK, Tadeja, JAVORŠEK, Dejana. Kakovost odtisov v UV-tehnologiji. *Grafičar (Ljubl.)*, 2008, [Št.] 2, str. 20, 30-32. [COBISS.SI-ID 2012528] **24.** LOZO, Branka, STANIĆ, Maja, JAMNICKI, Sonja, MAHOVIĆ POLJAČEK, Maja, MUCK, Tadeja. Three-dimensional ink jet prints - impact of infiltrants. *J. imaging sci. technol.*, Sep./Oct. 2008, vol. 52, no. 5, str. 051004/1-051004/8, ilustr. [COBISS.SI-ID 2105968] **25.** JAVORŠEK, Dejana, MUCK, Tadeja. Obstojnost UV ink jet odtisov na različnih materialih. *Papir (Ljublj.)*, 2008, letn. 36, št. 1, str. 26-[30]. [COBISS.SI-ID 2030704] **26.** JAMNICKI, Sonja, BARBARIĆ-MIKOČEVIĆ, Željka, STANIĆ, Maja, LOZO, Branka, MUCK, Tadeja. Introduction of computer print-outs in the recycling process of printed folding box-board. *Prog. pap. recycl.*, 2008, vol. 18, no. 1, str. 4-8, ilustr. [COBISS.SI-ID 2149232]
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	
Number of successful supervision undertakings which resulted in completion of doctoral thesis	LOZO, Branka. *A study of ink jet print stability by nondestructing methods: doctoral dissertation.* Zagreb: [B. Lozo], 2005. 114 f., ilustr. [COBISS.SI-ID 1578096]

Name	***Klaudio Pap***
Short CV	Klaudio Pap, PhD, is an associate professor at the Faculty of Graphic Arts. He was born in 1963 in Zagreb. After finishing a high school program with special emphasis on mathematics he studied at the Faculty of Electrical Engineering, University of Zagreb and graduated from the Computing Techniques program in 1988. He earned his Master's degree in 1997 at Computing Sciences program at the same faculty, where he also received his doctoral degree in 2004. The same year he was appointed research associate at the Zagreb university and assistant professor in the courses Computer Record and Computer Graphics. He has been an associate member of the Croatian Academy of Engineering since 2005, and became a senior research associate and associate professor at the Zagreb university in 2010. In his work he has been involved in research, development and application of computers in the area of computer graphics, image and text processing, computer models and simulations, web technology, digital printing and graphic programming languages. He received the annual scientific award "Rikard Podhorsky" for 2010 from the Croatian Academy of Engineering and the National Award for Science for 2010, awarded by the Croatian Parliament. Together with his associates he received many gold medals for Infraredesign innovation in Croatia and abroad. He is the co-author of five (5) development products and six (6) software

	packages. He is the co-author of three (3) patents. He received the diamond award for digital printing in 1996 and more than fifty (50) international awards for the „INFRAREDESIGN®“ innovation. In his early work he set up new models of mathematical pixel transformation which served as a basis for new computer graphics. By using new computer models and the PostScript programming language new possibilities in computer graphics were created and applied in RIP printing systems. He has participated in the development of many new procedures in printed matter protection. In the security field of graphic technology he processed and created new grating methods. Algorithms that enable the joining of a grating element to every image element individually were proposed. Deformations of grating elements from low to maximum opacity were developed. In this way, completely new functions of growth of grating elements were set up. New hybrid grating methods based on basic amplitudinally modulated method were created, with stochastic change of angle, lines and form of the grating element. He is the initiator of the project and scientific research of standards and creating digital scales of norms and communication dictionaries in the processes of publishing, graphic preparation, printing processes and processes of graphic finishing, integration of knowledge about norms and standards in graphic industry from different sources into a unique way of description in the form of an XML-document. He is involved in the research of workflows in graphic production and the creation of digital workflow bases, as well as the processes of continuous automatic production, operation processing and operation monitoring, and the optimisation of the process of graphic reproduction using the digital workflow base. His research includes setting up new methods in printing that use the infrared part of the electromagnetic spectrum with the possibility of creating a double image and double information. Such research was recognized internationally, patents were filed and gold medals won around the world for innovation with real application.
Date of last academic appointment to the teaching and research position	12 April 2004, associate professor
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	1. Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana; Žiljak-Vujić, Jana., Managing dual color properties with the Z-parameter in the visual and NIR spectrum. // Infrared physics & technology. 55 (2012) ; 326-336 2. Pavazza, Sandra; Pap, Klaudio, The Alternative Way of Creating Infographics Using SVG Technology. // Acta graphica. 23 (2012) ,1-2; 45-56 3. Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana., Development of a prototype for zrgb infraredesign device. //Technical Gazette.18 (2011) , 2; 153-159 4. Pap, Klaudio; Žiljak, Ivana; Žiljak-Vujić, Jana., Image Reproduction for Near Infrared Spectrum and the Infraredesign Theory. // The Journal of imaging science and technology. 54 (2010) , 1; 10502 -1-10502 -9 5. Žiljak, Vilko; Pap, Klaudio; Žiljak, Ivana., Infrared hidden CMYK graphics. // Imaging science journal. 58 (2010) , 1; 20-27 6. Barišić, Mario; Pap, Klaudio; Žiljak-Stanimirović, Ivana; Žiljak, Vilko. Double Image Design in Newspaper Production. // Acta graphica. 21 (2010) , 1-2; 27-33 7. Žiljak, Vilko; Pap, Klaudio; Žiljak-Vujić, Jana; Žiljak-Stanimirović, Ivana. Color Management Expansion on Infrared Spectrum with the INFRAREDESIGN Theory. // Engineering Power. 9 (2010) , 1; 1-2 8. Žiljak, Vilko; Pap, Klaudio; Žiljak, Ivana.. CMYKIR security graphics separation in the infrared area. // Infrared Physics and Technology. 52 (2009) , 2-3; 62-69 9. Stanić-Loknar, Nikolina; Pap, Klaudio; Posavec, Dijana; Koren, Tajana., Mutational Typography in Security Printing. // Annual 2009 of the Croatian Academy of Engineering. 1 (2009) ; 119-132 10. Žiljak, Ivana; Pap, Klaudio; Žiljak, Vilko., Double Separation Method for Translation of the Infrared Information into a Visible Area. // Journal of

	Information and Organizational Sciences. 33 (2009) , 1; 219-225 11. Žiljak, Ivana; Pap, Klaudio; Žiljak-Vujić, Jana., Infrared design on textiles as product protection. // Tekstil. 58 (2009) , 6; 239-253 12. Žiljak, Ivana; Žiljak-Vujić, Jana; Pap, Klaudio., Design of Security Graphics with Infrared Colours. // International Circular of Graphic Education and Research. 2 (2009) ; 24-31 13. Žiljak, Vilko; Pap, Klaudio; Žiljak, Ivana; Žiljak-Vujić, Jana., Upravljanje informacijama u infracrvenom dijelu spektra. // Informatologia. 42 (2009) , 1; 1-9 14. Pap, Klaudio; Žiljak-Vujić, Jana; Žiljak, Ivana; Agić D. Screen Element Shape "R73" Mutation // DAAAM International Scientific Book 2009 / Katalinić, Branko (ur.). Beč : DAAAM International, 2009. Str. 763-770. 15. Plehati, Silvio; Pavlović, Tomislav; Bogović, Tomislav; Pap, Klaudio; Žiljak-Vujić, Jana. FMEA Analysis of Xeikon Electrophotographics // DAAAM International Scientific Book 2009 / Beč : DAAAM International, 2009. Str. 977-984. 16. Žiljak, Ivana; Pap, Klaudio; Žiljak-Vujić, Jana. The print of the double picture and INFRAREDESIGN in the space of the security graphics // Advances in Printing and Media Technology / Nils, Enlund ; Lovreček, Mladen (ur.). Darmstadt, Germany : IARIGAI, 2009. Str. 445-448. 17. Žiljak, Vilko; Pap, Klaudio; Žiljak-Vujić, Jana; Žiljak, Ivana., Infraredesign ili CMYKIR separacija // Inovacijska kultura i tehnologijski razvoj / Božičević, Juraj (ur.). Zagreb : Hrvatsko društvo za sustave, 2009. Str. 169-174 18. Žiljak, Vilko; Pap, Klaudio; Žiljak-Vujić, Jana; Lajkovič, Josipa. Modeling and Simulation as The Basis for Hybridity in The Graphic Discipline Learning/Teaching Area. // Acta graphica. 20 (2009) , 1-4; 31-41 19. Pogarčić, Ivan; Pap, Klaudio; Žiljak, Ivana, eLearning as an information system // The 2nd International Multi-Conference on Engineering and Technological Innovation: IMETI 2009, Proceedings, Volume I / Nagib Callaos, Hsing-Wei Chu, Yaroslava Yingling, C.Dale Zinn (ur.). Orlando, 2009. 207-211 20. Pap, Klaudio; Žiljak, Ivana; Žiljak-Vujić, Jana., Process color management for producing double images. // Annual 2008 of the Croatian Academy of Engineering. 1 (2008) ; 395-410 21. Pap, Klaudio; Žiljak, Vilko; Žiljak, Ivana., Research of New Graphic Production Planning Methods with SVG technology. // International Circular of Graphic Education and Research Journal. 1 (2008) ; 40-47 22. Žiljak, Vilko; Pap, Klaudio; Žiljak-Vujić, Jana. Workflows Simulation Models as Tools for e-Learning of Graphic Production. // International Circular of Graphic Education and Research Journal. 1 (2008) ; 51-56 23. Žiljak-Vujić, Jana; Pap, Klaudio; Žiljak, Ivana, Design with mutant modulation screen elements. // International Circular of Graphic Education and Research. 1 (2008) ; 22-28 24. Žiljak, Ivana; Žiljak-Vujić, Jana; Pap, Klaudio. Colour control with dual separation for Daylight and Daylight / Infrared light // Advances in Printing and Media Technology / Enlund, Nils ; Lovreček, Mladen (ur.). Darmstadt, Germany : 2008. Str. 273-278 25. Mandić, Lidija; Majnarić, Igor; Agić, Darko; Pap, Klaudio; Stanić, Nikolina. The Quality of Digital Print // Proceedings of the Design 2008 Workshop Design of Graphic Media / Žiljak, Vilko (ur.)., Dubrovnik, 2008 26. Pap, Klaudio; Pavlović, Tomislav; Sabati, Zvonimir; Barišić, Mario; Koren, Antun. Digital Workflow System in Graphic Production // Proceedings of the Design 2008 Workshop Design of Graphic Media / Žiljak, Vilko (ur.). Zagreb : University of Zagreb, Faculty of Graphic Arts, 2008. 1459-1463 27. Pap, Klaudio; Pogarčić, Ivan; Sabati, Zvonimir, Research of Methods for Production Management and Making Reports through Digital Job Orders // Proceedings of the 19th Central European Conference on Information and Intelling Systems / Varaždin :2008. 485-489 28. Pap, Klaudio; Žiljak-Vujić, Jana; Žiljak, Ivana, Screen element shape "R73" mutation with method of growth function parameterization // Proceedings of the

	19th International DAAAM Symposium "Intelligent Manufacturing & Automation : "Focus on Next Generation of Intelligent Systems and Solutions", Vienna:DAAAM International, 2008 29. Plehati, Silvio; Pavlović, Tomislav; Bogović, Tomislav; Pap, Klaudio. Fmea analysis of Xeikon electrophotographics // Proceedings, 19th International DAAAM Symposium: Intelligent Manufacturing & Automation: "Focus on Next Generation of Intelligent Systems and Solutions", Vienna, 2008. 30. Pogarčić, Ivan; Frančić, Miro; Pap, Klaudio, Application of AHP Method in Development of Information Systems // Proceedings of the 19th CECIIS, 2008 / Varaždin : FOI Varaždin, University of Zagreb, 2008. 593-600 31. Sabati, Zvonimir; Pap, Klaudio; Žiljak, Ivana; Tomiša, Mario., E-learning of Extreme Production Procedures // Proceedings of the 19th Central European Conference on Information and Intelling Systems, Varaždin : Faculty of Organization and Informatics, 2008. 255-258 32. Žiljak, Ivana; Pap, Klaudio; Žiljak, Vilko, Translation of the Infrared into a Visible Area with Double Separation // Proceedings of the 19th Central European Conference on Information and Intelling Systems, Varaždin : Faculty of Organization and Informatics, 2008. 397-400 33. Žiljak, Ivana; Pap, Klaudio; Žiljak-Vujić, Jana; Bogović, Tomislav; Plehati, Silvio. Pseudo color in Infrared Design // Proceedings of the Design 2008 Workshop Design of Graphic Media, Zagreb : University of Zagreb, Faculty of Graphic Arts, 2008. 1497-1501 34. Žiljak-Vujić, Jana; Pap, Klaudio; Plehati, Silvio; Žiljak, Ivana; Kropar-Vančina, Vesna, Parametar modified screen element " Mutant r70" in security graphic // Proceedings of the Design 2008 Workshop Design of Graphic Media, Zagreb : University of Zagreb, Faculty of Graphic Arts, 2008. 1491-1495
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1. **Researcher** on scientific-research project, DIGITAL SYSTEMS IN PRINTING industry, Project code: 128009 Principal researcher: Vilko Žiljak, Faculty of Graphic Arts, Zagreb 2002-2012 2. **Project leader** of, IMPROVING WORKFLOWS IN GRAPHIC REPRODUCTION PROCESSES, 128-1281957-1956, Principal researcher: Klaudio Pap, 2007-2012 3. **Researcher** on scientific-research project, CROATIAN WORD HERITAGE AND CROATIAN EUROPEAN IDENTITY RJEČNIČKA BAŠTINA I HRVATSKI EUROPSKI IDENTITET, Project code: 130-1301679-1380, Principal researcher: Damir Boras, Faculty of Humanities and Social Sciences, Zagreb 2007-ongoing 4. **Project leader** of technological developmental research project, SOFTWARE TOOLS FOR PROGRAMMED GRAPHIC TECHNOLOGY LEARNING, Project code: TP-07/0128-10, Faculty of Graphic Arts, Zagreb Project duration: 20 months, 2007-2008
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1.Koren Tajana, Development of stenography in typography with stochastic distribution of infrared colours: doctoral dissertation, **supervisor**: Klaudio Pap, Zagreb: Faculty of Graphic Arts, 2010. 2.Stanić Loknar, Nikolina, Stochastic typography in security graphics: doctoral dissertation, **supervisor**: Klaudio Pap, Zagreb: Faculty of Graphic Arts, 2010.

Table 1. Detailed list of supervisors

Name	***MIROSLAV GOJO***
Short CV	**3.** Miroslav Gojo, PhD, full professor, was born in Tuzla on 13 August 1950. He finished elementary school and high school in Tuzla as well. After graduating from high school in 1969, he enrolled in the Faculty of Technology at the University of Zagreb, from which he graduated in 1976 and earned his Master's degree in 1979. He defended his doctoral thesis at the Faculty of Science and Technology at the University of Ljubljana in 1995. **4.** During his university studies he was an assistant at the Analytical and Physical Chemistry Departments for a number of years, and after graduating he was appointed assisstant at

	the Physical Chemistry Department at the Faculty of Technology , University of Zagreb on a fixed-term contract. After earning his Master's degree he was appointed research assistant. In 1980, he started working for RIZ – Tvornica poluvodiča (semiconductor factory) in Zagreb as a researcher in the development of chips. He worked in RIZ until 1990, when he was appointed senior assistant in the Printing Forms course at the Faculty of Graphic Arts in Zagreb. After he defended his doctoral thesis, he was appointed assistant professor in 1998, associate professor in 2002 and full professor of technical science, field of graphic technology, for the Printing Forms course group, in 2006. In September 2011 he was appointed full professor with tenure in 2011. He has been teaching the undergraduate, graduate and postgraduate programme at the Faculty of Graphic Arts. In 2010 he was appointed visiting professor at the Faculty of Technical Sciences, University of Novi Sad. He has published several scientific papers in domestic and international journals and participated in a number of scientific symposiums in Croatia and abroad. He also edited several proceedings and was a member of organizing committees at different scientific symposiums. Miroslav Gojo, PhD, full professor, managed the following scientific projects: - "Development of measurement methods of printing form surfaces" code. 128-1201785-2228, Ministry of science of the Republic of Croatia (2007), - *"Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing "*, Bilateral project Croatia-Slovenia, Ministry of science of the Republic of Croatia (2010). He participated in the realization of several other domestic and international scientific projects. He is a member of several domestic and international scientific and professional associations: International Society of Electrochemistry (member), DAAAM International, Croatian Academy of Engineering (associate member), Croatian Chemical Society (member), Croatian Society of Chemical Engineers and Technologists Zagreb (member of the Presidency of the electrochemical section, now member), MIDEM Society for Microelectronics, Electronic Components and Materials, Ljubljana (secretary, now member) Croatian society for materials protection (member), The society of university teachers, scholars and other scientists Zagreb (President of the Supervisory Board), AMACIZ, Society of Engineers of Chemical Technological Study Zagreb (member) Scientific Field Committee for the area of technical sciences – the field of chemical engineering, mining, petroleum and geological engineering, metallurgy, textile technology and graphic technology (member from 2009 to 2013).
Date of last academic appointment to the teaching and research position	13 September 2011, full professor with tenure
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	**1.3 Paper or chapter in a book** 1. T. Cigula, S. Mahović Poljaček, **M. Gojo,** *"The Significance of Exposition and Developing Oscilations in CtP andConventional Plate Making Processes"*, in: "DAAAM International Scientific Book 2008", Chapter 20, (ed. B. Katalinić), Vienna, Austria, (2008), 229-238. 2. **M. Gojo,** S. Dedijer, D. Novaković, S. Mahović Poljaček, *"Influence of the Microsurface Offset Printing Plates on the Machine Printing Process"*, in "Machine Design 2009", (ed. S. Kuzmanović), Novi Sad, Serbia, (2009), 415-420. 3. D. Novaković, I. Karlović, T. Cigula, **M. Gojo,** *"Offset Plate Surface Roughness*

in the Function of Print Quality", in "Machine Design 2009", (ed. S. Kuzmanović), Novi Sad, Serbia, (2009), 439-444.

4. T. Cigula, S. Mahović Poljaček, **M. Gojo,** *"Influence of the Printing Process on the Quality of AgX Printing Plates"*, in: "DAAAM International Scientific Book 2009", (ed. B. Katalinić), Vienna, Austria, (2009), 897-906
5. T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Influence of Drop Volume on Time-dependant Contact Angle",* in: "DAAAM International Scientific Book 2010", (ed: B. Katalinić), Vienna, Austria, (2010), 195-202.
6. D. Novaković, S. Dedijer, **M. Gojo**, S. Mahović Poljaček, *"Analsys of Surface Roughness Factors of Solid Printing Areas on Flexo Printing Plates"*, In "Machine Design 2010", (ed. S. Kuzmanović), Novi Sad, Serbia, (2010), 319-324.
7. T. Cigula, **M. Gojo,** D. Novaković, Ž. Pavlović,*"Influence of Various Concentrates on Quality of Printing Plates' Wetting Process"*, in "Machine Design 2010", (ed. S. Kuzmanović), Novi Sad, Serbia, (2010), 325-330.

1.4. Scientific paper published in a journal cited in tertiary publications

1. **M. Gojo,** V.D. Stanković, S. Mahović Poljaček *"Electrochemical Deposition of Gold in Citrate Solution Containing Thallium"*, Acta Chim. Slov., 55 (2) (2008), 330-337.
2. S. Mahović Poljaček, D. Risović, K. Furić, **M. Gojo,** *"Comparison of fractal and profilometric methods for surface topography characterization"*, App. Surf. Sc, Vol. 254(11) (2008), 3449-3458.
3. D. Risović, S. Mahović Poljaček, K. Furić, **M. Gojo,** *"Inferring fractal dimension of rough/porous surfaces - a comparison of SEM image analysis and electrochemical impedance spectroscopy methods"*, App. Surf. Vol. 255 (2008), 3063-3070.
4. D. Risović, S. Mahović Poljaček, **M. Gojo,** *"On correlation between fractal dimension, profilometric parameters in characterization of surface topographies"*, App. Surf. 255, (2009), 4283-4288.
5. S. Mahovic Poljacek, D. Risovic, T. Cigula, M. Gojo, *"Application of electrochemical impedance spectroscopy in characterization of structural changes of printing plates",* Journal of Solid State Electrochemistry, 16, 3,(2012), 1077-1089.
6. T. Cigula, R. Fuchs Godec, M. Gojo, M Slemnik, *"Electrochemical Impedance Spectroscopy as a Tool in the Plate Making Process Optimization",* Acta Chim. Slov., 53 (3) (2012), 513-519.

1.5. Scientific paper published in a journal cited in secondary publications

1. S. Mahović Poljaček, T. Cigula, **M. Gojo**, *"Formation and Defining the Different Aluminium Oxide Microstructures in Alkaline Solutions"*, Int. J. Mater. Form, 1, (2008), 463-466.
2. T. Cigula, S. Mahović Poljaček, **M. Gojo,** *"Influence of the Print Run on Silver Hali Printing Plates"*, Journal of Graphic Engineering and Design 1, (2010), 39-44.

1.6. Scientific papers, reviewed and published in international conference

1. S. Miloš, T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Contribution to the Printing Ink - Printing Plate – Run Lenght Interactions"*, Proceedings, MATRIB 2008., (ed. K. Grilec, G. Marić, S. Jakovljević), Vela Luka, (2008), 205-210.
2. T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Analysis of the Silver Halide Printing Plates after Printing Process"*, Proceedings, 19th International DAAAM Symposium:

Intelligent Manufacturing & Automation: "Focus on Next Generation of Intelligent Systems and Solutions", (ed. B. Katalinić), Trnava, (2008), 0251-0252.

3. T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Changes of the Surface Characteristics in the Plate Making Process"*, Proceedings, GRID '08, (ed. D. Novaković), Novi Sad, (2008), 53-58.
4. T. Cigula, S. Mahović Poljaček, **M. Gojo**, *"Defining the Properties of Fountain Solution Dependind on Type of Surface Active Substavce"*, Proceedings, MATRIB 2009., (ed. K. Grilec, G. Marić,), Vela Luka, (2009), 16-20.
5. D. Novaković, I. Karlović, **M. Gojo**, *"Influence of the Surface Characteristics on Quality of the Offset Printing Plate"*, Proceedings, MATRIB 2009., (ed. K. Grilec, G. Marić,), Vela Luka, (2009), 142-148.
6. M.Baračić, T Cigula, T. Tomašegović, P. Y. Žitinski Elias, **M.Gojo,** *"Influence of Plate Making Process and Developing Solutions on the Nonprinting Areas of Offset Printing Plates"*, Proceedings, 20th International DAAAM Symposium: "Intelligent Manufacturing & Automation: Theory, Practice & Education", (ed. B. Katalinić), Vienna, (2009), 0599-0600,
7. T. Cigula, S.Mahović Poljaček, **M. Gojo,** *"Defining of Time-Dependent Contact Angle of Liquids on the Printing Plate Surfaces"*, Proceedings, 20th International DAAAM Symposium: "Intelligent Manufacturing & Automation: Theory, Practice & Education", (ed. B. Katalinić), Vienna, (2009), 0627-0628, 0627-0628,
8. **M. Gojo,** Ž. Pavlović, D. Novaković, *"Analysing of the Surface Roughness of non Printng Elements on CtP Thermal Offset Plates"*, Proceedings, 11th International Design Conference, (ed. V. Žiljak, D. Milčić), Zagreb, (2010), 1941-1946.
9. T. Cigula, S. Mahović Poljaček, **M. Gojo**, D. Novaković, *"Roughness of nonprinting surfaces of the offset printing plate depending on processing solution concentration"*, Proceedings, MATRIB 2010., (ed. Z Schauperl, M. Šnajder), Vela Luka, (2010), 44-50.
10. T. Cigula, S. Mahović Poljaček, N. Pintar, **M. Gojo,** *"Quality of the Printing Plates as a Function of Chemical Processing"*, Proceedings, 21st International DAAAM Symposium: "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions", (ed. B. Katalinić), Vienna, (2010), 0495-0496,
12. **M. Gojo,** S. Mahović Poljaček, T. Cigula, *"Nonprinting Areas on the Offset printing plates What we knoww-what we should knoww"*, Proceedings,5th International Symposium Grid '10, (ed. D. Novaković,). Novi Sad, (2010), 9-18, (plenary lecture).
13. T. Cigula, Ž. Pavlović, **M. Gojo**, D. Risović, *"Wetting of Offset Plate's Non-Printing Areas as a Function of Print Run"*, Proceedings,5th International Symposium Grid '10, (ed. D. Novaković,). Novi Sad, (2010), 211-218.
14. T. Tomašegović, T. Cigula, S. Mahović Poljaček, **M. Gojo,** *"Effect of Exposures on the Mechanical Properties of the Liquid Photopolymer Flexographic Printing Plate "*, Proceedings, MATRIB 2011., (ed. Z Schauperl, S. Šolić,), Vela Luka, (2011), 495-501.
15. T. Tomašegović, T. Cigula, S. Mahović Poljaček **M. Gojo,** *"Wetting of CtP offset plate as a function of developing process"*, Proceedings, 22nd International DAAAM Symposium: "Intelligent Manufacturing & Automation: Power of Knowledge and Creativity", (ed. B. Katalinić), Vienna, (2011), 0019-0020.

1.6.38. T. Tomašegović, T. Cigula, S. Mahović Poljaček, **M. Gojo**, ***"Comparison of different measuring systems for printing plate´s coverage values evaluation "***, Printing future days proceedings 2011 (ed. R. R. Baumann,). Chemnitz, (2011), 39-44.

	16. S. Dedijer, T. Cigula, D. Novaković, **M. Gojo**, , *"The contact angle of reference liquids on flexographic printing plates as a function of time* ", Proceedings, 6th International Symposium Grid '12, (ed. D. Novaković,). Novi Sad, (2012), 121-128 **1.7. Scientific papers, reviewed and published in proceedings from domestic scientific symposiums** 1. G. Golob, B. Zajc, **M. Gojo**, *"Usporedba kemijskih parametara otopina za vlaženje u ofsetnom tisku"*, Proceedings, GRID '08 ", (ed. D. Novaković), Novi Sad, (2008), 33-39. 2. R. Fuchs – Godec, M. Slemnik, **M. Gojo**, T. Cigula, " *Elektrokemijske raziskave aluminija in njegovih oksidov, Korozijska odpornost ter njihova uporaba v procesu offset tiskanja"*, Zbornik referatov, Slovenski kemijski dnevi 2011., (ed. Z. Kravanja, D. Brodnjak-Vončina, M. Bogataj), Portorož, (2011), CD 1-8.
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	1. Method development for mesuaring area of a printing forms no. 128-1201785-2228), Ministry of science education and sport, Croatia (2007-) 2. *"Electrochemical testings and corrosion resistance of aluminium and its oxides and application in print form for planographic printing"* Bilateral project Croatia-Slovenia, Ministry of science, education and sports of the Republic of Croatia, (2010) 3. Digitalization of museum painting heritage code. 128-1281957-1958, Ministry of science, education and sport, Croatia (2007-)
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1. Sanja Mahović, *"Characterisation of surface structures of offset printing forms"* Doctoral dissertation, Faculty of Graphic Arts, Zagreb, 2007. 2. Tomislav Cigula, *"Qualitative analysis of available surfaces of printing forms"* Doctoral dissertation, Faculty of Graphic Arts, Zagreb, 2011. 3. Živko Pavlović, *"Characterisation of surface structure of nonprinting elements of CtP thermal printing form for offset printing",* Doctoral dissertation, Fakultet tehničkih nauka Univerzitet u Novom Sadu, 2012.

Table 1. Detailed list of supervisors	
Name	***Klementina Možina***
Short CV	Klementina Možina was born on 11 June 1971, in Ljubljana. She attended elementary and high school in Ljubljana. After graduating from high school she enrolled in the Faculty of Graphic Arts in Zagreb, from which she graduated in 1993. In 1994 she enrolled in the Master's programme at the Faculty of Arts in Ljubljana, and received her Master's degree in 1997. Two years later she enrolled in the doctoral program at the same faculty. During the preparation of her doctoral dissertation in 2000, she studied in England for three months at the University of Reading, Department of Typography and Graphic Communication. She defended the dissertation titled *Zgodovinski razvoj knjižne tipografije* in 2001. In 2004 she was appointed assistant professor. After she graduated from university she worked at the Mladinska knjiga printing house for 5 years (until 1998); first as a technologist, then as a project leader, and as the manager of the department of production planning for the final three years. Since 1998 she has worked at the Faculty of Natural Sciences and Engineering, Chair of Information and Graphic Technology. As associate professor, she teaches the following courses: Tipografija, Tipografija v različnih medijih, Tipografski elementi, Tipografsko načrtovanje, Teorija tipografije. From 2005 to 2006 she also taught the courses Vodenje grafične proizvodnje and Grafični inženiring.

Date of last academic appointment to the teaching and research position	Associate professor; October 25, 2012
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	MOŽINA, Klementina. *Mikrotipografija*. Ljubljana: Naravoslovnotehniška fakulteta, Oddelek za tekstilstvo, 2009. 275 str., ilustr. ISBN 978-961-6045-65-0. [COBISS.SI-ID 245149696] MOŽINA, Klementina, MOŽINA, Klemen, BRAČKO, Sabina. Non-invasive methods for characterisation of printed cultural heritage. *J. cult. herit.*, 2013, vol. 14, [No.] 1, str. 8-15, ilustr., doi: 10.1016/j.culher.2012.02.012. [COBISS.SI-ID 2719600] BLAZNIK, Barbara, MOŽINA, Klementina, BRAČKO, Sabina. Stability of ink-jet prints under influence of light. *Nordic Pulp and Paper Research Journal*, 2013, vol. 28, no. 1, str. 111-118. [COBISS.SI-ID 2864752] VILAR, Andrej, MOŽINA, Klementina, PAVKO-ČUDEN, Alenka. Tipografija in logotipi v pletenih strukturah = Typography and logos in knitted structures. *Tekstilec*, 2013, letn. 56, št. 1, str. 34-46, ilustr. [COBISS.SI-ID 2860144] MOŽINA, Klementina, ZIDAR, Miša, HORVAT, Marija. Typography and graphic design in newspaper Slovenec. *Papiripar*, 2012, letn. 56, št. 4, str. 20-24, ilustr. [COBISS.SI-ID 2870128] MOŽINA, Klementina. Reprints of Jože Plečnik's fairytales Makalonca. *Acta graph.*. [Print ed.], 2011, [vol.] 22, [št.] 3/4, str. 85-92, ilustr. http://www.actagraphica.hr/index.php/actagraphica/article/view/19. [COBISS.SI-ID 2753136] RAT, Blaž, MOŽINA, Klementina, BRAČKO, Sabina, PODLESEK, Anja. Influence of temperature and humidity on typographic and colorimetric properties of ink jet prints. *J. imaging sci. technol.*, Sep./Oct. 2011, vol. 55, no. 5, str. 050607/1-050607/8, ilustr. [COBISS.SI-ID 2677104] RAT, Blaž, MAJNARIĆ, Igor, MOŽINA, Klementina. Visibility of care labelling code symbols = [Vidljivost simbola za njegu tekstila = Suchtbarkeit der Pflegekennzeichnungssymbole]. *Tekstil*, 2011, vol. 60, no. 6, str. 5251-257. [COBISS.SI-ID 2684784] MOŽINA, Klementina. Mikrotipografija arhitekta Jožeta Plečnika. V: VODOPIVEC, Ines (ur.). *Zgodovina knjige in bralne kulture na Slovenskem*, (Knjižnica, letn. 55 (2012), št. 4). Ljubljana: Zveza bibliotekarskih društev Slovenije: Narodna in univerzitetna knjižnica, 2011, dec. 2011, letn. 55, št. 4, str. 147-161, ilustr. http://revija-knjiznica.zbds-zveza.si/Izvodi/K1104/Mozina.pdf. [COBISS.SI-ID 2713200] MOŽINA, Klementina, URBANC, Tanja, RAT, Blaž, BRAČKO, Sabina. Influence of light on typographic and colorimetric properties of ink jet prints. *J. imaging sci. technol.*, Nov./Dec. 2010, vol. 54, no. 6, str. 060403/1-060403/8, ilustr. [COBISS.SI-ID 2510192 MOŽINA, Klementina. *Tipografski geslovnik - dopolnitve*. Ljubljana: Grafičar, 2008. http://www.graficar.si/tipografskigeslovnik_dopolnitve.htm. [COBISS.SI-ID 2107504]
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	L2-9278 Analysis of separately collected fractions of disposed packaging materials in Slovenia, possible applications and printability, 2007–2009
Number of successful supervision undertakings which resulted in completion of doctoral thesis	Dva: RAT, Blaž. *Digitalizacija tipografije Blaznikove tiskarne in njena uporabnost v različnih medijih : doktorska disertacija*. Ljubljana: [B. Rat], 2012. XV, 179 f., ilustr., graf. prikazi, tabele. [COBISS.SI-ID 261215488] BOLANČA-MIRKOVIĆ, Ivana. *Ecologically more friendly offset colours and print deinking mechanisms: doctoral dissertation*. Zagreb: [I. Bolanča Mirković], 2007. 182 f., ilustr. [COBISS.SI-ID 1988464]
Name	Vilko Žiljak, PhD, full professor
Short CV	Vilko Žiljak was born in Sveti Ivan Zelina on December 18, 1946. Since 1959 he has

	been living in Zagreb and received his entire education there. After finishing high school, he studied at the Faculty of Science, where he earned the title of „engineer in experimental physics“ in 1973. He completed his doctoral studies in 1981 at the Faculty of Electrical Engineering and earned the title „doctor of technical sciences, field of computing sciences“. V. Žiljak has been permanently employed since 1970. Since 1982 he has been employed with the Faculty of Graphic Arts, as a professor and Head of the Department of Typefaces and Computers. He teaches in the postgraduate programs at the Faculty of Electrical Engineering and Computing, Faculty of Organization and Informatics Varaždin, School of Medicine, Faculty of Civil Engineering, Faculty of Graphic Arts and Faculty of Economics and Business, and undergraduate programs at the Faculty of Architecture (School of Design) and at the Polytechnic of Zagreb (Professional Study in Information Technologies). In his work, he has been engaged in research, development and application of informatic, computer and graphic technology in a wider scientific area. In Croatia, he is considered a pioneer in three scientific branches: mathematical modeling and simulation, computer graphic and printing, and computer-assisted visual research. He published his first books in Croatian on these areas, and organised instruction in undregraduate and postgraduate studies. He has published papers as an author and co-author in the following scientific fields: technical science (computing, graphic technology, geology), medicine, social (education, sociology, information science, economic science), humanities (science in art) and natural sciences. His biography lists 360 titles (www.ziljak.hr) He has published more than a hundred scientific and professional papers: papers in internationally recognised journals and papers in proceedings from international conventions. He has held about 50 lectures at international and domestic scientific symposiums, and published about 50 professional papers and popular science articles. He has also written instructional texts: ten books (four of which in foreign languages for foreign publishers), ten book chapters and instructional texts mandatory in undergraduate and postgraduate courses.
Date of last academic appointment to the teaching and research position	2004, full professor with tenure
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	1. V. Žiljak, K. Pap, I. Žiljak, "CMYKIR SECURITY GRAPHICS SEPARATION IN THE INFRARED AREA", Infrared Physics and Technology Vol.52. No.2-3, ISSN 1350-4495, Elsevier B.V. DOI:10.1016/j.infrared.2009.01.001, p: 62-69, (2009) (CC, SCI, SCI-Expanded) 2.Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana; Žiljak-Vujić, Jana. Managing dual color properties with the Z-parameter in the visual and NIR spectrum. // Infrared physics & technology. 55 (2012) ; 326-336 (CC , SCI, SCI-Expanded). 3.Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana. DEVELOPMENT OF A PROTOTYPE FOR ZRGB INFRAREDESIGN DEVICE. // Technical Gazette. 18 (2011) , 2; 153-159 , IF 0,601 4.Vilko Ziljak, Klaudio Pap, Jana Ziljak Vujic, Josipa Lajkovic MODELING AND SIMULATION AS THE BASIS FOR HYBRIDITY IN THE GRAPHIC DISCIPLINE LEARNING/TEACHING AREA; Acta Graphica; Vol 20, No 1-4 (2009) . 5.Tajana Koren, Vilko Ziljak, Nikolina Stanic-Loknar, Aleksandra Bernesek ; Mathematical MODELS OF THE SINUSOIDAL SCREEN FAMILY ; Acta Graphica; Vol 22, No 1-2 (2011) . 6.Maja Turčić, Vilko Žiljak, Ivana Ž.–Stanimirović INDIVIDUAL STOCHASTIC SCREENING FOR THE DEVELOPMENT OF COMPUTER GRAPHICS; Acta Graphica | Vol 22, No 3-4 (2011) 7.V. Žiljak, J. Akalović, J.Ž. VujićUpravljanje bojilima na koži u vidljivom i infracrvenom spektru / Dye control on leather in the visual and infrared spectrum, Tekstil No 8 Vol 60, pp.335-363; UDK 677 + 687(05), ISSN 0492-5882, Zagreb, 2011. 8. Rajendradrakumar Anayath, V. Žiljak, Invisible pics hit newspaper, RIND Survey, Feb. 2011, Rs.40.00 Vol 32 - Issue 2, pp 4-6, Chennal, India

	9. M. Barišić, K. Pap, I. Ž. Stanimirović, V. ŽiljakDouble Image Design in Newspaper Production. // Acta graphica. 21 (2010) , 1-2; 27-33 10.INFRARED HIDDEN CMYK GRAPHICS, The Imaging Science Journal, (1368-2199) 58 (2010); 20-27; ISSN: 1368-2199 Online ISSN: 1743-131X, imsmpa 045.3d DOI: 1179/136821909X12520525092882, (CC, SCI-Expanded) 11.Double Separation Method for Translation of the Infrared Information into a Visible Area, JIOS; journal of information and organizational science, VOL. 33, NO. 1 (2009) ; UDC 004.92:004.056 ; ISSN 1846-3312; e-ISSN 1846-9418
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Graphic of documents and securities, 128-1281957-1961 Scientific project leader; "Digital systems in typography", 1281957, for projects: Digitalization of museum heritage, 128-1281957-1958, project leader D. Agić Improvement of workflows in graphic reproduction processes, 128-1281957-1956, project leader K. Pap Graphic of documents and securities, 128-1281957-1961, V Ziljak
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1.Petra Poldrugač, Improvement of methods of detecting counterfeited graphics in securities, Faculty of Graphic Arts, 2011. 2.Petar Miljković, Integration model of digital workflows 3. Maja Rudolf – Offset production, Faculty of Graphic Arts, 2012 Post stamps security graphics my means of dual features of dyes with Z parameters and individualised grating elements, Faculty of Graphic Arts, 2013

Name	***Darko Babić***
Short CV	I was born in Zagreb on 30 June 1948. I finished elementary school and high school in Zagreb, where I enrolled in the Faculty of Mechanical Engineering and Naval Architecture. In 1975, I graduated from the faculty and took employment in the Design Department of Pliva, Pharmaceutical Company. My position included the folowing duties: designing (Fodder factory in Kalinovica, Chewing gum factory in Nerežišće, Brač), reconstruction of the existing plants (synthesis plants, candy production plant in Borongaj, Zagreb, C-vitamin production plant) and the construction of different devices and equipment (exchangers, vibrating sieves, central heating systems etc.). In 1978 I was hired by the Graphic Technology College in Zagreb as an assistant at the Department of Graphic Finishing. I defended my master's thesis in 1984, and my doctoral dissertation in 1992 at the Faculty of Mechanical Engineering and Naval Architecture in Zagreb. Besides the basic subject – graphic finishing, I taught practice courses and seminars in Descriptive Geometry, Machine Elements and Technical Mechanics at the Graphic Technology College, as well as part of the practice courses in Quality Control. In 1987 I was appointed scientific researcher in the field of mechanical engineering, and in 1988 I was appointed lecturer for the scientific field of mechanical engineering in the courses Graphic Product Design and Introduction to Graphic Technology at the Graphic Technology College in Zagreb. The Graphic Technology College became the Faculty of Graphic Arts in 1989 and since then I have been teaching the following courses at the Faculty: Designing Graphic Products and Introduction to Graphic Technology (one-semester courses) and Graphic Finishing (three-semester course: Graphic Finishing 1, Graphic Finishing 2 – Bookbinding and Graphic Finishing 3 – packaging). I was appointed research associate in 1992, and in 1993 I was appointed assistant professor at the Faculty of Mechanical Engineering and Naval Architecture in Zagreb. I was re-elected as assistant professor in 1999, and associate professor in 2003. I was registered as a research associate in the field of mechanical engineering on November 24 1992 in the registry of the Ministry of Science and Technology under the number 100023. I furnished the instruction room for the courses Graphic Finishing, Designing Graphic Products and Introduction to Graphic Technology. With the help of donations and faculty resources I procured new machines and laboratory devices,

	modernized the instruction by introducing audio-visual tools and started up the Graphic Centre for designing and examination, which I also manage. In the school years 1995/1996 and 1996/1997 I was the Vice-Dean for financing, scientific-research work and working while studying. During my term of office as Vice-Dean I participated in the procurement of resources for furnishing the faculty halls. Apart from that, I launched the working-while-studying program in Osijek, two classes in Zagreb, and I contracted the working-while-studying program in Rijeka. From 1981 to 1990 I participated in scientific programs of the Ministry of Science and Technology in the field of graphic materials under the common title „ Problems of reproduction in graphic technology“. From 1990 to 1993 I participated in the project of the Ministry of Science and Technology in the field of graphic materials titled „Exploring the processes and materials in graphic technology“, and at the end of May 1997 the Ministry of Science accepted the „Control and quality of cardboard packaging“ project that received the highest grade for these types of projects. I was the main researcher in this project, which was completed in 2001. I wrote a university textbook, proposed a curriculum for the postgraduate program for the Graphic Finishing course at the Faculty of Graphic Arts. I reviewed several books for *Školska knjiga*, worked as an associate in the preparation of several books and in the preparation of the technical encyclopedia of the „Miroslav Krleža“ Institute of Lexicography. I have been a member of the Croatian Academy of Engineering since 2000. I am also a member of the Editorial Board of the „Ambalaža“ journal, and during 1999 and 2000 I was the main editor and editor-in-chief of this journal. I was the leader, moderator and organiser of counseling for the international exibition „Modernpak” at the Zagreb Fair in 1996. I participated in the translation and patent processing in the area of graphic finishing for the State Intellectual Property Office. I was also the president of the Technical committee 130 for graphic technology at the State Office for Metrolofy, the member of the Presidency of the Croatian Packaging Systems Producers Association Zagreb at the Croatian Chamber of Economy. I am a long-term member of the jury in the selection of best packaging, awarded by the Zagreb Fair within the "Modernpak" exhibition. The award is called *Zlatna jabuka (Golden Apple)*. I am a member of two committees within the regular activities at the Faculty of Graphic Arts (Instruction Committee and Rector's Award Selection Committee). I am a member of Croatian ergonomics society and a long time secretary and active member of the oldest amateur musical society „Sloga“.
Date of last academic appointment to the teaching and research position	The selection procedure for awarding tenure is pending
List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programme	S. Pasanec Preprotić, D. Babić, A. Tuzović, *"The influence of Paper permanence on Adhesive Joint Strength"*, TTEM-Technics Technologies Education Management, 6 (4) (2011), 1024-1031. ISSN 1840-1503 (SCI Expanded IF 0,256, Cit: 0/0) S. Pasanec Preprotić**,** D. Babić, A. Tuzović, *"Research of Adhesive Joint Strength Dependency in Relation to Position of Loose Leaf in Text Block",* Technical Gazette, 19 (2012), 43-49. ISSN 1330-3651 (SCI Expanded IF 0,083, Cit: 0/0) Pasanec Preprotić, D. Babić, A. Tuzović, *"Bindability of High Grades Papers by Perfect Binding Technique"*, Acta Graph. 22(1-2), (2011), 21-32. ISSN 0353-4707 (INSPEC, GEOARCHIVE, EBSCO, DOAJ) **B. Lajic, D. Babic, D. Jurecic; *Influence of Paper Type end hight of Waves on***

	***the Quality of Three-Layer Corrugated Carboard,* Proceedings of the 5th International Conference on Computer aided Design and Manufacturing CADAM'07 /Obsieger, Boris (ur.), Rijeka: Zigo, 2007. (ISBN: 978-953-7142-24-7)., Published in Advanced Engineering 2(2008)1, ISSN 1846-5900 (predavanje, međunarodna recenzija, objavljeni rad, znanstveni)** D. Jurečić, B. Lajić, D. Babić; *Primjena RFID mikročipa pri rukovanju ambalažom*; TISKARSTVO 2008, CIP zapis dostupan u računalnom katalogu Nacionalne i sveučilišne knjižnice u Zagrebu pod brojem 657497, ISBN 978-953-7064-08-2, Stubičke Toplice, 2008. Jurecic, D.; Babic, D.; Lajic, B.; *Important Factors of Corrugated Cardboard'S Quality of Punching Resistence*, Annals of DAAAM for 2008 & Proceedings of the 19th International DAAAM Symposium, 22-25th October 2008, Trnava, Slovakia, ISSN 1726-9679, ISBN 978-3-901509-68-1, Katalinic, B. (Ed.), pp. 0649-0650, Published by DAAAM International Vienna, Vienna(2008). Jurečić, D.; Babić, D.; Lajić, B.; *Influence of Different Constructive Solutions on Strength of Transport Packaging*; 10th International Design Conference DESIGN 2008, (ed. Vilko Žiljak), Dubrovnik, pp. 1469 – 1475, 2008 Jurečić, D.; Babić, D.; Lajić, B.; *Važni faktori kvalitete valovitog kartona* // Annals of DAAAM 2008& Proceedings / B Katalinić (ur.). Beč: DAAAM International, Vienna, 2008. 0689-0690 (poster, međunarodna recenzija, objavljeni rad, znanstveni). Relevant factors of corrugated paperboard quality // Annals of DAAAM 2008 & Proceedings / B Katalinić (ur.). Beč: DAAAM International, Vienna, 2008. 0689-0690 (poster, internacional rewiev, published work, scientific) Babić, Darko; Lajic, Branka; Jurečić, Denis; Pasanec Preprotić, Suzana: *The Construction of Corrugated Boxes as a Key Parameter of their Strength* // Proceeding of the Design 2010 Workshop: Design graphics with security elements /Žiljak, Vilko Milčić, Diana (ur.)/ ; - Zagreb: University of Zagreb, Faculty of Graphic Arts, 2010. 1957-1962 (ISBN: 978-953-7738-08-2) (predavanje,međunarodna recenzija,objavljeni rad, znanstveni). Babić, Darko; Miljković, Petar, Jurečić, Denis. *Uses of Resource Links for Metadata Flow in Automatic Workfl* // Proceeding of the Design 2010 Workshop: Design graphics with security elements/Žiljak, Vilko, Milčić, Diana (ur.); Zagreb: University of Zagreb, Faculty of Graphic Arts, 2010. 1957-1962 (ISBN: 978-953-7738-08-2) / (ur. Žiljak, Vilko ; Milčić, Diana). (predavanje,međunarodna recenzija,objavljeni rad,znanstveni). S. Pasanec Preprotić, D. Jurečić, D. Babić, B. Lajić, *"Important Factors of Paperback Books Quality of Adhesion Strength in Adhesive Binding"*, Proceedings, 21st International DAAAM Symposium: "Intelligent Manufacturing & Automation: Focus on Interdisciplinary Solutions", (ed. B. Katalinić), Viena, (2010), 0953-0954. ISBN 978-3-901509-73-5, ISSN 1726-9679. (INSPEC)

	D. Babić**,** B. Lajić, D. Jurečić, S. Pasanec Preprotić*, "The Construction of Corrugated Boxes as a key Parameter of their Strength"*, Proceedings, 11th International Design Conference, (ed. V. Žiljak, D. Milčić), Zagreb, (2010), 1957-1962. ISBN 978-953-7738-08-2 S. Pasanec Preprotić**,** D. Babić, A. Tuzović; *Vrednovanje kvalitete sljepljnog spoja obzirom na fizikalna svojstva papira*, Proceedings, 2nd International scientific and professional conference of graphic technology and design GeDIT, (ed. D. Babić), Kiseljak, (2011), 106-113. ISSN 2232-8831
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	
Number of successful supervision undertakings which resulted in completion of doctoral thesis	2

Name	**Vilko Žiljak, PhD, full professor**
Short CV	Vilko Žiljak was born in Sveti Ivan Zelina on December 18, 1946. Since 1959 he has been living in Zagreb and received his entire education there. After finishing high school, he studied at the Faculty of Science, where he earned the title of „engineer in experimental physics“ in 1973. He completed his doctoral studies in 1981 at the Faculty of Electrical Engineering and earned the title „doctor of technical sciences, field of computing sciences“. V. Žiljak has been permanently employed since 1970. Since 1982 he has been employed with the Faculty of Graphic Arts, as a professor and Head of the Department of Typefaces and Computers. He teaches in the postgraduate programs at the Faculty of Electrical Engineering and Computing, Faculty of Organization and Informatics Varaždin, School of Medicine, Faculty of Civil Engineering, Faculty of Graphic Arts and Faculty of Economics and Business, and undergraduate programs at the Faculty of Architecture (School of Design) and at the Polytechnic of Zagreb (Professional Study in Information Technologies). In his work, he has been engaged in research, development and application of informatic, computer and graphic technology in a wider scientific area. In Croatia, he is considered a pioneer in three scientific branches: mathematical modeling and simulation, computer graphic and printing, and computer-assisted visual research. He published his first books in Croatian on these areas, and organised instruction in undregraduate and postgraduate studies. He has published papers as an author and co-author in the following scientific fields: technical science (computing, graphic technology, geology), medicine, social (education, sociology, information science, economic science), humanities (science in art) and natural sciences. His biography lists 360 titles (www.ziljak.hr) He has published more than a hundred scientific and professional papers: papers in internationally recognised journals and papers in proceedings from international conventions. He has held about 50 lectures at international and domestic scientific symposiums, and published about 50 professional papers and popular science articles. He has also written instructional texts: ten books (four of which in foreign languages for foreign publishers), ten book chapters and instructional texts mandatory in undergraduate and postgraduate courses.
Date of last academic appointment to the teaching and research position	2004, full professor with tenure

List of published papers which qualify him/her for programme delivery and that are relevant to the doctoral programm	1. V. Žiljak, K. Pap, I. Žiljak, "CMYKIR SECURITY GRAPHICS SEPARATION IN THE INFRARED AREA", Infrared Physics and Technology Vol.52. No.2-3, ISSN 1350-4495, Elsevier B.V. DOI:10.1016/j.infrared.2009.01.001, p: 62-69, (2009) (CC, SCI, SCI-Expanded) 2.Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana; Žiljak-Vujić, Jana. Managing dual color properties with the Z-parameter in the visual and NIR spectrum. // Infrared physics & technology. 55 (2012) ; 326-336 (CC , SCI, SCI-Expanded). 3.Žiljak, Vilko; Pap, Klaudio; Žiljak-Stanimirović, Ivana. DEVELOPMENT OF A PROTOTYPE FOR ZRGB INFRAREDESIGN DEVICE. // Technical Gazette. 18 (2011) , 2; 153-159 , IF 0,601 4.Vilko Ziljak, Klaudio Pap, Jana Ziljak Vujic, Josipa Lajkovic MODELING AND SIMULATION AS THE BASIS FOR HYBRIDITY IN THE GRAPHIC DISCIPLINE LEARNING/TEACHING AREA; Acta Graphica; Vol 20, No 1-4 (2009) . 5.Tajana Koren, Vilko Ziljak, Nikolina Stanic-Loknar, Aleksandra Bernesek ; Mathematical MODELS OF THE SINUSOIDAL SCREEN FAMILY ; Acta Graphica; Vol 22, No 1-2 (2011) . 6.Maja Turčić, Vilko Žiljak, Ivana Ž.–Stanimirović INDIVIDUAL STOCHASTIC SCREENING FOR THE DEVELOPMENT OF COMPUTER GRAPHICS; Acta Graphica | Vol 22, No 3-4 (2011) 7.V. Žiljak, J. Akalović, J.Ž. VujićUpravljanje bojilima na koži u vidljivom i infracrvenom spektru / Dye control on leather in the visual and infrared spectrum, Tekstil No 8 Vol 60, pp.335-363; UDK 677 + 687(05), ISSN 0492-5882, Zagreb, 2011. 8. Rajendradrakumar Anayath, V. Žiljak, Invisible pics hit newspaper, RIND Survey, Feb. 2011, Rs.40.00 Vol 32 - Issue 2, pp 4-6, Chennal, India 9. M. Barišić, K. Pap, I. Ž. Stanimirović, V. ŽiljakDouble Image Design in Newspaper Production. // Acta graphica. 21 (2010) , 1-2; 27-33 10.INFRARED HIDDEN CMYK GRAPHICS, The Imaging Science Journal, (1368-2199) 58 (2010); 20-27; ISSN: 1368-2199 Online ISSN: 1743-131X, imsmpa 045.3d DOI: 1179/136821909X12520525092882, (CC, SCI-Expanded) 11.Double Separation Method for Translation of the Infrared Information into a Visible Area, JIOS; journal of information and organizational science, VOL. 33, NO. 1 (2009) ; UDC 004.92:004.056 ; ISSN 1846-3312; e-ISSN 1846-9418
List of science and art project assigned to in the last 5 year and which are relevant to the doctoral programme	Graphic of documents and securities, 128-1281957-1961 Scientific project leader; "Digital systems in typography", 1281957, for projects: Digitalization of museum heritage, 128-1281957-1958, project leader D. Agić Improvement of workflows in graphic reproduction processes, 128-1281957-1956, project leader K. Pap Graphic of documents and securities, 128-1281957-1961, V Ziljak
Number of successful supervision undertakings which resulted in completion of doctoral thesis	1.Petra Poldrugač, Improvement of methods of detecting counterfeited graphics in securities, Faculty of Graphic Arts, 2011. 2.Petar Miljković, Integration model of digital workflows 3. Maja Rudolf – Offset production, Faculty of Graphic Arts, 2012 Post stamps security graphics my means of dual features of dyes with Z parameters and individualised grating elements, Faculty of Graphic Arts, 2013

Table 3. Detailed list of courses at the doctoral study programme
Add a table for each course

Table 3: Detailed list of courses	
Course name	***Color management in digital systems***

Number of lectures	15
general course/ module content;	Digital photo processing and the necessity of implementation of colour management system. Systems for image accepting, processing and formatting. Characteristics of reflective and transparent media. The role of densitometric and spectrophotometric measuring in color management system. Colour spaces are included in the colour management system. Input devices – digitalisators, characteristics. The principle of encoding and decoding of input device signals. Multiple image input – input compatibility. Monitor characteristics -gray scale, caliometric, the impact of flare. Image processing to output devices. System architecture for colour management. Creating profiles of input and output devices. Selecting appropriate transformation from the colour range that can display a single device in the colour range of another device. Transformations from one colour space to another colour space.
Description of the methods of teaching	Consultations
Description of the means of meeting obligations	Seminar paper Oral exam
Table 3: Detailed list of courses	
Course name	***Chemical analysis of graphic technology materials***
Number of lectures	20
general course/ module content;	The meaning of chemical analysis and its application in chemical identification and separation of the sample during the technological process. Sampling, testing and analysis of data related to graphic materials. Conducting analytical process from sample to optimal information. Chemical laws in methods of identification and separation of analytes. System approach to chemical analysis. Sample (representative sample) and sampling. Preparation of sample for analysis. Degradation and dissolution of the sample. Separation of analytes (removal of remaining matter). Choosing a method for expressing analytical procedures. Gravimetric determination (reaction stoichiometry, gravimetry calculations, sediment properties and reagents for precipitation). Titrimetry (acid-base reactions, potentiometric titrations, conductometric titrations, oxidoreduction titrations, polyelectrolyte titrations, complexometric titrations, permanganatometry, iodometry, bromatometry, precipitation titration). Separation (filtration, dialysis, separation based on particles' size, centrifugation, destillation, precipitation, ion exchange, extraction, evaporation, recrystalisation, sublimation) and chromatographic methods (chromatographic analysis – gas chromatography GC, CC column chromatography, PC paper chromatography). Spectroscopic methods (spectroscopies in the visible and infrared area – FTIR – spectrophotometer). Evaluation of analytical data. Errors of the analytical system. Measurement uncertainty.
Description of the methods of teaching	Consulations, review of bibliography
Description of the means of meeting obligations	Writing a seminar paper based on bibliography data and laboratory researches.
Table 3: Detailed list of courses	
Course name	***Raster elements in print***
Number of lectures	20
general course/ module content;	Achieving different dyes with raster: different surfaces, different thickness of the colour layers. Raster dot size. Structure of the raster dot in conventional and digital print. Transfer of the dye to different printing substrates. Growth and deformation of the raster dot on the print, halo. The impact of the basic printing material quality and printing techniques to the measurement results. Error in measurements. The correlation between measuring with physical appliances and

	visual experience of the viewer.
Description of the methods of teaching	Consultations.
Description of the means of meeting obligations	Seminar paper and oral exam.
Table 3: Detailed list of courses	
Course name	***Modern statistical methods in natural sciences and engineering***
Number of lectures	20
general course/ module content;	Extension of statistical way of thinking and approach to research and experimentation. Students become familiar with modern statistical methods they will use at their R&D or professional work. Emphasis is on understanding the basic ideas of the presented techniques and on solving real-world engineering problems by means of statistical software. • Characteristics of research work in natural sciences and engineering • Statistical software (web resources, StatGraphics, Statistica, Excel, MATLAB) • Overview of basic statistics (sample and population, data, variables, descriptive and inferential statistics, normal distribution, hypothesis testing, univariate and multivariate statistics, one-way analysis of variance (ANOVA), linear correlation and regression) • Multivariate methods (principal components analysis, cluster analysis, multifactorial ANOVA, overview of other methods: factor analysis, multiple linear regression, discriminant analysis, multidimensional scaling, correspondence analysis) • Design and analysis of experiments (factorial designs, factors and their interactions, response surfaces, optimization methods)
Description of the methods of teaching	- block lectures - consultations
Description of the means of meeting obligations	- seminar paper made by each student - oral exam
Table 3: Detailed list of courses	
Course name	***Interaction of electromagnetic radiation with printing substrate***
Number of lectures	30 ECTS 7 (1. term, joint)
general course/ module content;	Light and the law of energy conservation. Beer-Lambert's system. Kubelka-Munk's system. Murray-Davies' method. Empirical Murray-Davies model of tone reproduction for raster image. Yule-Nielsen correction. Physical analysis of the Yule-Nielsen effect in printing. Modelling the Yule-Nielsen effect by means of probability function. Huntsman's model. The theory of linear systems via function of point spreading (Point Spread Function) that is described in the Fourier field as modulation transfer function MTF (Modulation Transfer Function). MTF analysis of the printing substrate and print. Oittinen-Engeldrum's model. Reflection spectra. Mathematical analysis of the experimental results with Mathcad 2002 programmes, and Data Analysis and Technical Graphics Origin 6.0.
Description of the methods of teaching	Consultations (bibliography, define interest area), agreement on measuring (samples, method...)
Description of the means of meeting obligations	Research paper for symposium or magazine
Course name	***Physical principles of non-destructive methods for graphic reproduction measurement***
Number of lectures	30 ECTS 7 (2. term, graphic engineering)
general course/ module content;	Overview of modern non-destructive methods in printing technology. Electron Microscope, Scanning (Scanning Electron Microscopy, SEM) and electronic microscoping in the standard ambient conditions (Environmental Scanning Electron Microscopy, ESEM). X-spectroscopy as a result of the interaction of fast electrons with the sample. Spectroscopy in the visible, UV (Ultra Violet Resonance Raman Spectroscopy) and infrared (FTIR) part of the electromagnetic radiation

	spectrum and the associated measuring instruments. Time resolved spectroscopy (TRS). Photoacoustic sensors (PAS): photoacoustic spectroscopy, photoacoustic scattering detection.
Description of the methods of teaching	Consultations (bibliography, define interest area), agreement on measuring (samples, method...)
Description of the means of meeting obligations	Research paper for a conference or a journal
Table 3: Detailed list of courses	
Course name	***Advanced recording processes on printing forms***
Number of lectures	25
general course/ module content;	Redefinition of printing forms as the information record carrier; material and virtual printing forms; digital records of information on printing forms; dynamic printing forms; CTP and CTS systems; system architecture; laser and other sources of energy for generating images; interaction of the emitted energy with the surface; physical, physical-chemical and electrochemical processes in image generating; ablational and non-ablational processes; thermical processes; electrocoagulation; electrostatic processes, selectively sensitive layers, semiconductors and organic photoconductors; systems with no processes; relation between resolution and printing speed; different CTP configurations; analysis of functional characteristics of unconventional printing forms; surface topography and geometry on printing forms; comparative analysis of conventional, CTP and virtual printing forms.
Description of the methods of teaching	Lectures
Description of the means of meeting obligations	At the end of the lecture and following consultation with the teacher students select a topic from the contents of lectures that they have found particularly interesting. They analyse it and present it in writing and orally. They plan experimental work, research methodology and data processing (if the chosen topic allows) and finally, publishing a joint scientific paper at a conference or a journal.
Table 3: Detailed list of subjects	
Course name	***Presentation of information***
Number of lectures	30 hours /academic year
general course/ module content;	The course content is based on principles that are used to define the strategy of presenting informaton. The course programme includes defining the problem, establishing the connection between the consumer and information presenter, creating the need for accepting information, defining competencies, creating optimum conditions for presenting, methods for accepting the presenter, methods for collecting and analysing information. Categorisation and ways of presenting different informative contents. Techniques and tools of delivering a multimedia presentation. Formatting text, image, video and audio contents in a multimedia presentation. New approaches to information presentation. Presentaton planning. Presentation performance. The purpose of the course Presentation of information is to enable students to acquire competencies related to the presentation of different types of information with an emphasies on graphic information in order to make it possible for them to consider all the relevant parametres that influence the strategy and practical delivery of the presentation.
Description of the methods of teaching	Consultations, seminar paper, presentations
Description of the means of meeting obligations	Evaluation of the seminar paper, presentation of the seminar paper, evaluation of the presentation and competencies gained during activities related to the content of the module.

Table 3: Detailed list of courses	
Course name	***Non-destructive measuring methods in graphic technology in Graphic Engineering, a doctoral programme at the University of Zagreb***
Number of lectures	30
general course/ module content;	The purpose of applying non-destructive measuring methods in graphic technology, examples of applications in the study of interaction of print materials: CCD camera and data processing using a programme for image analysis; Raman spectroscopy: basic measurements, depth measurement usinf the immersion method of sample preparation, construction of deep sections and interpretation; UV Raman and FTIR-PAS: surface and subsurface signals of solvable and pigmented dyes' prints on various printing substrates, meaning; CLSM, examples of measurements using the immersion method, orthogonal projection, 3D projection. Microscoping: SEM: sample preparation; BSE and SEI images, surface images and cross sections of prints; LM surface of prints, general AFM and ESCA guidelines. Control methods: LM microtome prints; FIB. Accompanying computer programes.
Description of the methods of teaching	Individual consultations with each student
Description of the means of meeting obligations	Determining the topic of the research study, supervision and review of the final paper

Table 3: Detailed list of courses	
Course name	***User interface design***
Number of lectures	20
general course/ module content;	Ergonomics in computer science. Ergonomics as a science observing work, work organisation and work safety. Review of existing norms in ergonomics related to computer science and their application. Ergnomics in design and modelling. The interrelation: human – computer – environment. Analysis of the environment of the end user of the computer and their tasks. Ergonomic principles in creating workplaces and work environment. Ergonomics of computer equipment. Building a user interface, dialogue user – computer (Human Computer Interaction), graphic user interfaces, built-in forms of assistance, programme documentation, means of serving. 3D user interfaces. Ways and possibilities for end user's education and their self-education. Theory and design methodolgy. Function of design as a communication medium. Features and application of design theory. Basics of form theory, theory of signs. Multidimensionality of design. Theory of communictions and design. Interdisciplinary design features: quality, marketing, ergonomics, usage value, analysis of value, durability, style, graphics.
Description of the methods of teaching	Consultations
Description of the means of meeting obligations	Seminar paper based on the scientific research study

Table 3: Detailed list of courses	
Course name	***Design theory***
Number of lectures	20
general course/ module content;	Design theory and methodology. Function of design as a communication medium. Features and application of design theory. Basics of form theory, theory of signs. Multidimensionality of design. Theory of communictions and design. Interdisciplinary design features: quality, marketing, ergonomics, usage value, analysis of value, durability, style, graphics. What is industrial design? Modern products' development. The role of design in products' development. Methodology of integrated products' development. Planning on product requirements and management. QFD (Quality Function Deployment) methodology and its usage. CFD (Concurrent Function Deployment) methodology and application. Product and process systematisation. Critical design goals in product development: usefulness of the product, look and shape of the product, possibility for maintenance, cost of products, usability, communication. Classification of

	significant methods of design. Criteria and evaluation of design's success.
Description of the methods of teaching	Consultations
Description of the means of meeting obligations	Seminar paper based on the scientific research study
Table 3: Detailed list of courses	
Course name	***Digital space design***
Number of lectures	20
general course/ module content;	The course observes theoretical and practical foundations of scientific research of digital media. Due to digital technology, traditional boundaries among: games, learning and story; drama, informative and narrative forms; broadcasting (TV, radio) and archive (books, video tapes, CD, DVD) media, between author and audience, are increasingly losing their meaning. Therefore, designers are left facing a demanding job of researching and creating a wide range of technical, representational and artistic possibilities of new media as well as possibilities for trasmission of knowledge. The study of these new forms, from the standpoint of new authors as well as the standpoint of the audience requires the convergence of methods of several traditional disciplines and defining new methodologies in research and praxis. The transition from the so-called Guttenberg into the information galaxy also presupposes the shift from the mechanical, subject oriented designer praxis to the praxis characterised by a system that gives the control to users instead of a designer, emphasises the importance of society (social network), recognizes the importance of the media convergence and requires joint work of interdisciplinary teams so as to solve the complex problems of the present day. In the category of "digital space", its construction and deconstruction is achieved by various methods such as the mobility of the camera and frame, opposition and superposition. Spatio-temporal design of the graphic message is used for the purpose of improving the interaction between the viewer and the message; increasing the motivation and the quality of experience, branding and development of the new communication strategies. However, "design of the digital space" is not only a tool but also means that can generate new design ideas and create unexpected forms, textures and samples, with the help of graphic programmes and algorithms. Therefore, computers can be used as a mediator in the process of connecting different parts of actual, physical and virtual worlds.
Description of the methods of teaching	Teaching is conducted in the form of consulations and students are suggested cetain tools as well as qualitative and quantitative methods related to the type of research they are undertaking: analysis of user experence, experiment, simulation, case study, eye-tracking, study, colorimetrics , print gloss measurement, QR code scanning, poll, group research, independent research, learning through practice outside of the university.
Description of the means of meeting obligations	Seminar paper based on the scientific research study or a scientific article to be published in the journal of category B
Table 3: Detailed list of courses	
Course name	***Colorimetric methods in graphic reproduction***
Number of lectures	15
general course/ module content;	Colour determination. Physical stimulus. Light source. Hurich- Jameson's theory of colour vision. Abnormal colour vision. Metamerism. Systems of describing colours based on opinion, perception and colour equalisation. Unique colour spaces. The basic principles of colour measuring. Visual evaluation of the colour. Instrumental colour measuring. Geometry of colour measuring. Measuring of different types of substrates. Problem of colour differences. Perceptibility and acceptability of colour differences. Expressions for determining the total colour difference.
Description of the methods of teaching	Lectures and consulations
Description of the means of	Seminar in a form of a practical solution for potential colorimetric problems in the

meeting obligations	industry. Oral exam
Table 3: Detailed list of subjects in the doctoral programme	
Course name	***Image display models in a variety of media***
Number of lectures	15
general course/ module content;	The course provides students with the basic theoretical knowledge of models for displaying colours in different systems and directs them to the problems in the present day image reproduction. Some model preferences have been implemented in the colour management system. Spatial and temporal characteristics of vision. Terminology used in the models for displaying colours (lightness, brightness, colourfulness, saturation, chroma). Phenomena that afftect the display of images in different media due to changes in the background, the level of brightness (simultaneous contrast, spreading, Hunt effect, etc.). Defining the condition for observation as one of the important factors of models for displaying colours. The importance of chromatic adaptation in models for displaying colours, explanation and their role. Explanation of some models for displaying colours that are embedded in systems for managing colours in graphic reproduction: Hunt's model, RLAB model, CIECAM 97. Construction of models for displaying colours: input data, inverse model, testing. Disadvantages and advantages of the aforementioned models and what all parameters are included in each model for displaying colours. Practical application using Matlab programme as well as the application of inverse models. The present day research.
Description of the methods of teaching	Lectures Consultation
Description of the means of meeting obligations	Research (seminar paper-article) Oral exam
Table 3: Detailed list of courses	
Course name	***Advanced printing systems***
Number of lectures	30
general course/ module content;	The course is concerned with observing issues that occur in modern graphic production in advanced printing systems that are operated by different computer programmes and simulations of production. The issues of the course are related to the current state of technology in the market but the principles that allow easier assumption of future technological trends and expectations regarding these trends are also taught.
Description of the methods of teaching	With a sufficient number of students, teaching is provided through lectures and individual approach to solving certain issues by means of modern scientific methods. When there is a smaller number of students, the teaching is provided through consultations where students research the issues related to the subject – presented in the bibliography in either Croatian or English – by applying scientific methods.
Description of the means of meeting obligations	Taking exams follows after completion of scientific researches based on a specific issue and a conversation with the professior who will determine whether all the researches have been done according to the rules of the profession and by applying the scientific research methods. In addition to the researches performed, the student must be able to explain the issues of the course content.
Table 3: Detailed list of courses	
Course name	***Multimedia web technologies***
Number of lectures	25 hours, 6 ECTS
general course/ module content;	Electromagnetic wave and digital communications. Development of computing and web technologies. Multimedia in web environment and hypermedia communications. Multimedia computers and networks. Wireless multimedia webs. Computational methods of receiving and processing information and creating knowledge. Interactive multimedia communications. Elements of visual interfaces. The technology of virtual reality. Multidimensional interactive

	interface. Adaptable intelligent interfaces. Lifelike multimedia interfaces. Linking multimedia interfaces with databases. Creating multimedia web content (HTML, Java, Flash). Build web portals. Web communication on request in graphic production. Multimedia teleconferencing technology. Visual interfaces and monitors. Distributed network collaboration and production. Connecting multimedia network technology and digital printing. Introduction of computer and data grid technologies and possible applications in graphic production.
Description of the methods of teaching	Lectures, seminars, laboratory based lectures
Description of the means of meeting obligations	Consultations, seminar papers, participation in projects and research programmes
Table 3: Detailed list of courses	
Course name	***Virtual people***
Number of lectures	20
general course/ module content;	Foundations of biomechanics. Basics of anatomy and physiology of a human being. Simulation of people on the computer. Graphical models: volumetric models, parametric surfaces, networks of polygons. Human face modeling. Body animation: direct and inverse kinematics and dynamics, simulating the mechanical system: passive and active simulations, control systems. Animation of deformable bodies (special cases: skin, face, clothing and hair). Behaviour. Standards for virtual humans. Practical application in Open Source software package for modeling and animation – Blender.
Description of the methods of teaching	lectures, computer workshop
Description of the means of meeting obligations	lectures, computer workshop
Table 3: Detailed list of courses	
Course name	**Interaction of print materials**
Number of lectures	30 teaching hours
general course/ module content;	Introduction of modern methods for better understanding the interactions as well as more relevant analysis of the surface of the printing material (dynamics of liquid penetration – PAD, dynamic wetting angle – DAT, photoacoustic spectroscopy – PAS, confocal laser scanning microscopy – CLSM, atomic force microscopy – AFM, stereo photometry, laser profilometry, microtomy, etc.). Detailed familiarising with the interactions in newer, digital printing methods: ink-jet (IJ) and other types of digital printers for industrial, office and home use: properties of the printing ink (colorant type: dye pigment, solvent type (water, organic solvent)) and printing material (roughness, surface treatment – coating with pigments, porosity of nano-coating...). Durability of print (mechanical, optical, waterproof...), dependance on the energy of adhesion of the dye to the paper. Influence of the electronic charge of the black and influence of the surface cartridge of the printing material on the interactions and final print quality. Various forms of interactions (e.g. electrostatic or ionic interactions, π-π interactions, hydrophobic interactions, dipole-dipole interactions, covalent bonds, hydrogen bonds and van der Waals bonds). Mathematical methods for adequate characterisation of the paper sample and objective determining of the print quality with an emphasis on procedures of visual procssing of the print. Negative effects (wicking, bleeding, mottling). Various devices and procedures for collecting data (photography, print...), (CCD camera, optical reader, microscope), dependence of the final result on the precision of the device used. Ways of image processing (by means of morphological transformations, spatial filters).
Description of the methods of teaching	Teaching in the form of lectures and seminar papers written by students.

Description of the means of meeting obligations	Consultations.
Table 3: Detailed list of subjects in the doctoral programme	
Course name	**PROTECTION OF INFORMATION IN PRINT**
Number of lectures	15
general course/ module content;	Creating modules for digital information in all forms of protecting the visual image of the printing forms. Calculation of the loss of information in an information channel as a destructive phenomenon while forming input and output information. Organisation of print protection in graphic preprinting, finishing and printing including internet printing. Secret protection parametres.
Description of the methods of teaching	Lectures and submission of a seminar paper.
Description of the means of meeting obligations	Consulations and lectures
Table 3: Detailed list of courses	
Course name	***SAFETY GRAPHIC DESIGN***
Number of lectures	Hours: 20 ECTS: 5
general course/ module content;	Design of graphic products with visible and invisible security elements. Safety raster elements, infrared design, holography, dynamic and three-dimensional graphics, microtext and safety typography, safety encryption, safety colourful barcode, individualisation, digital databases, softwares for creating and analysing of the safety graphics, instruments for verifying originals and detecting counterfeits. Permeation of the previous scientific methods with design on theoretical and practical levels. Applications on all graphic products with an emphasis on the design of gilts, documents, packaging (all types of packaging, drugs packaging). Protection of graphic products, brands. Designing graphics with regard to different materials; cardboard, paper, cotton, linen, silk (book covers) and planning design for different techniques of performance. Possibility to use the conventional techniques for printing while implementing safety screening in a way that allows planning premium protection. Design considering the colours, process and spot colours in the safety press with prompt in the visible and invisible part of the spectrum – UV and infrared area of wavelengths.
Description of the methods of teaching	Depending on the number of students assigned for the doctoral course, teaching will be performed as planned by the programme or in form of consultations.
Description of the means of meeting obligations	Exam is taken in the given timeframe.
Table 3: Detailed list of courses	
Course name	***Digital standardisation of graphic prepress***
Number of lectures	25
general course/ module content;	The course provides knowledge of the working stages and developments of graphic prepress for the purpose of recognition process and transforming it into the appropriate norm. Classification is set in the area of digitalisation of the scene and the template, colour separation, integration of the text and image, film development, direct and indirect making of the offset board, making of the printing bitmap for digital print, individualisation of the digital record and interface functions for image processing and raster elements. The methods for describing the reproduction graphic processes using XML elements and attributes. The system of equations and functions that connect variables between different phases of graphic prepress is also observed. Studying digital standardisation using one of the defined operations, process nodes i sources for graphic prepress enables the creation of electronic calculations, work orders and plans. The goal of the course is to provide competencies for independent digital standardisation of all the phases of graphic prepress in the present day and future technological environments.
Description of the methods of teaching	Interactive lectures with elaborated bibliography content. Computer workshop on the simulated model.

Description of the means of meeting obligations	Continual knowledge testing through seminars. Exams are taken by means of solving tasks on the computer as well as orally, to confirm the acquisition of the subject matter.
Table 3: Detailed list of courses	
Course name	***Graphic web technologies***
Number of lectures	20
general course/ module content;	The course observes graphic languages that enable serving, receiving and processing of graphic objects on a web interface. The first thing analysed is XML technology and its derivatives DTD and XSD, XSL and XSLT which are necessary for development of graphic languages in web technology. Also defined are possibilities and tasks of graphic web languages SVG, VML and XSL-FO. Students will study drafting and grouping of graphic objects, making cut routes and masking paths, filter effects and creating graphic template. There will also be lectures on interactive web vector graphics and animation on web interface, dynamic creation of HTML and WML records as well as automatisation of PDF documents production from the database. The course aims to develop knowledge of graphic web technologies and skills for their usage in the present day and future web interfaces.
Description of the methods of teaching	Interactive lectures with elaborated bibliography content. Computer workshop.
Description of the means of meeting obligations	Continual knowledge testing through seminars. Exams are taken by means of solving tasks on the computer as well as orally, to confirm the acquisition of the subject matter.

Table 3: Detailed list of courses	
Course name	***Selected sections on corrosion and protection***
Number of lectures	20
general course/ module content;	As part of the course, students will observe different forms of corrosion and substances that cause the appearance of corrosion. The basics of the theory of chemical corrosion of metals will also be presented as well as factors that influence the speed rate of the chemical corrosion. Electrochemical nature of corrosion and kinetics of electrochemical corrosion will be presented. During the process of corrosion local parts that have a significant influence on the very process of corrosion are also formed. Threfore, special attention will be given to the appearance of local parts because during the printing process different materials come into contact with the electrolytes that can cause corrosion of certain parts of the machine. Methods for testing corrosion will also be presented as well as inhibition and prevention of corrosion. Corrosion control. Due to the fact that during printing processes different materials come into contact, the corrosion behaviour of different metals and alloys used in graphic technology will be presented. The course wll also cover the corrosion of organic materials. The basic technology for protecting the material from corrosion will be shown. Cathodic protection. Protection by means of external power sources. Protection with metallic and non-metallic coatings.
Description of the methods of teaching	LECTURES, SEMINARS
Description of the means of meeting obligations	ORAL EXAM
Table 3: Detailed list of subjects in the doctoral programme	
Course name	***Printing forms moistening***
Number of lectures	20
general course/ module content;	As part of the course, the mechanism of moistening as a physical phenomenon on printing forms for offset printing will be observed. The content of the moistening solutions and their physical and chemical properties and functions and function of each particular component will be presented. Determining of the physical and chemical parametres of the moistening solution as well as the pH value of the moistening solution and its impact on the printing form will be explained. The influence of the electric conductivity of the moistening solution and its measurement

	will be presented. The role of the surface tension in the process of offset printing and its measurement will be demonstrated and explained. Contact angle as a measure of successful moistening explains the very mechanism of wetting. Measuring of the contact angle will also be demonstrated. Hydrophilic and oleophilic properties of materials for printing forms. The effect of the surface active substances on the moistening mechanism. The impact of alcohol on the moistening process and its substitution. The impact of the paper on the changing of the properties of the moistening solution. Disposal of the used moistening solutions.
Description of the methods of teaching	LECTURES, SEMINARS
Description of the means of meeting obligations	ORAL EXAM

Table 3: Detailed list of subjects in the doctoral programme	
Course name	**PHYSICAL AND CHEMICAL PROPERTIES OF POLYMERS**
Number of lectures	30
general course/ module content;	Foundations of the physical chemistry of polymers: Structure and properties of polymer molecules. Configurations and conformations. Polydispersity. Molecular weight distribution. Statistic functions of the molecular weight distribution. Molecular weight averages. Polymer solutions. Types of interactios polymer – solvent. Criteria of solubility. Parametre of solubility. Kinetics of swelling and dissolution. Viscisity of polymer solutions. Thermodynamics of polymer solutions. Theories of polymer solutions. Phase separations and balances in polymer systems. Polymer materials: polymer blends. Thermodynamics of polymer blends. Phase diagrams. Modification of the polymer bordering surface/ polymer. Polymer liquid chrystals. Polymer compositions: Polymer compositions in the selection of materials. Matrices. Fillers. Reinforcements. Polymer bordering surface/ filler (reinforcement). Modification of the polymer bordering surface/ filler (reinforcement). Polymer nanocompositions. Preparation of the nanocompositions. Organic – anorganic hybrids. Application of polymers and polymer compositions.
Description of the methods of teaching	lectures
Description of the means of meeting obligations	seminar paper, oral exam

Table 3: Detailed list of subjects in the doctoral programme	
Course name	**Polymerisation processes**
Number of lectures	20
general course/ module content;	Introduction. Classification of polymerisation reactions. Polymerisation reactions: radical polymerisation: initiation, propagation, termination. transfer of chain reaction growth. Gradual polymerisation, Ionic polymerisation: anionic and catonic polymerisation. Copolymerisation reactions; Lewis-Mayo equation, typological copolymerisation diagrams. Q-e scheme. Ring-opening reactions – norbornenes. Industrial execution of polymerisation: polymerisation in mass and solution, suspension polymerisation and emulsion polymerisation. Reactors in polymer chemistry. Supplementary equipment and modes of refining end of polymerisation reaction. Networks reactions. Polymer recycling. Degradation, stabilisation and modification of polymer materials. Polymer waste management.
Description of the methods of teaching	Student-adapted methods of teaching: lectures and/or consultation hours, possibility of synthesis of polymer materials in laboratory.
Description of the means of meeting obligations	Independent seminar paper related to the topic of scientific and professional interest to the student. Written exam.

Tablica 3. Detaljni popis predmeta na doktorskom studiju

Course name	Human resource management
Number of lectures	20
general course/ module content;	Human and material resources. Basic elements and activity phases of human resource management. Management efficiency. Work quality: investments in human resources; distribution of earnings; job training. External conditions of human resource management. Technological changes. Population policy and labour force. Labour market requirements. Technological changes. Influence by government and Union strategies. Financial, technological, cultural-philosophical conditions. Human resources planning. Management expenses. Innovations and human resources. Labour market segmentation. Collective negotiation: Unions wages. Collective negotiations and negotiation peace.
Description of the methods of teaching	Lectures, consultations
Description of the means of meeting obligations	exam
Tablica 3. Detaljni popis predmeta na doktorskom studiju	
Course name	Parameter optimisation of graphic machinery design
Number of lectures	20
general course/ module content;	The purpose of the course is to introduce the students to modern graphic industry machinery designs in a manner not elaborate din undergraduate study. The students are introdued to design solutions of graphic machinery by a procedure of methodological designing used in modern industrial product projecting. In the procedure, the industrial product is observed as a complex system which is also a subsystem of its entire environment. The system *human - graphic machine – environment* is observed, where emphasis is given to see a complex dynamic network of reciprocal connections and causation of some party of the system during the overall „life cycle“ of the machine – from machine projecting, its instalment and insertion in the machinery to its removal and recycling. In the examples of the most important graphic machinery used in printing and processing, human-graphic machine relation is investigated, as well as its artificial, natural and social environment – *basic*, *technical*, *communicational* and *symbolic* function is investigated. With each machine basic subsystems are examined as complex systems, and so on to basic elements.
Description of the methods of teaching	Classes are in the form of oral presentation and conversation methods. Topic-specific oral presentation is introduction to coursework analysis which stimulates students during the conversation for independent conclusions.
Description of the means of meeting obligations	Active class participation and project task design is compulsory. Overall grade is a sum of class activities (20% of the total) and performance of project task (80%).
Course name	Visualisation in graphic product modeling
Number of lectures	20
general course/ module content;	The aim of the course is to point to the importance of draft geometry application in graphic product modelling, as people can rarely manipulate virtual 3D objects with no aids and only in imagination. When solving geometrical problems, draft geometry is aided by space object images layout and by model development, either virtual on computer or real. This is the way to develop capacity of space layout as a factor of human intelligence, and a visualisation indispensable for designing a 3D graphic product. The course also includes which possibilities in 3D graphic product design are offered by knowledge interaction from draft geometry

	applied in computer programs. By using modern system in 3D graphic product design, the time for idea materialisation is reduced, it goes through the most favourable modeling for product, it draws attention and it offers a sense of satisfaction to the buyer.
Description of the methods of teaching	Classes are in the form of oral presentation and conversation methods. Topic-specific oral presentation is introduction to coursework analysis which stimulates students during the conversation for independent conclusions.
Description of the means of meeting obligations	Active class participation and project task design is compulsory. Overall grade is a sum of class activities (20% of the total) and performance of project task (80%).
Table 3. Detailed list of courses	
Course name	***Typography theory***
Number of lectures	30
general course/ module content;	The course contents are based on a detailed study of the influence of historical periods and art styles to typography. It introduces typographic rules, valid for writing of some european and world languages. It introduces the role (meaning) of text content in the selection of typography, as well as the methods of readability testing. A detailed overvieew of historical period influences, art styles and technological development to typography: early (first) records, manuscript of Roman empire, manuscript to year 1500, renaissance, design of first (early) printed letters, baroque, classicism, industrialisation, post 20th century period, art nouveau, new traditionalism, modernism, postmodernism, typographical galaxy. Microtypography of foreign languages: English (British and American), German, Italian. Influence by information contect to selection of typography: intent, message, usage. Usage of different methods of readability testing.
Description of the methods of teaching	Classess are student-adapted – lectures and/or consultations
Description of the means of meeting obligations	Students prepares a research seminar paper and he/she must defend it.
Table 3. Detailed list of courses	
Course name	***Methodology of presenting graphic solutions***
Number of lectures	20
general course/ module content;	The course is based on a systematic approach and analysis of visual message for an actual graphic medium within the framework of technological propositions and limitations of presenting graphic solutions. The systematic concept is composed of stratification of possible choices with reference to the end visually-perceptible system in the context of a multidisciplinary approach. Analysis of a graphic solution realised by differend technological processes makes possible the evaluation of a visual message considering the proposition criteria that are set by the medium's type and character. In accordance with the differences of certain graphic media, the aim of the course is to find adequate visual message presentation considering the existing technological possibilities and processes used in practice. The methodological approach is based on subjective and objective research methods.
Description of the methods of teaching	Definition of course and aim of research, research plan (methodological and chronological), research results
Description of the means of meeting obligations	Research topic must be elaborated in the form of publication in a relevant journal
Table 3. Detailed list of courses	
Course name	***Graphic structures***
Number of lectures	30

general course/ module content;	The course contents refer to measurability of graphic structures and research of their formal-semantic relations. Relations in semiological nomenclature known as relation between sign and meaning, are limited here to graphic structures and informative criterion. We are dealing with the analysis of graphic form structurality levels such as letters, numbers, and their accurately specified fonts, as well as signs of other formal language. Other procedures, next to Gestalt method of determining structurality level, are used to measure the form complexity. With so-called developmental forms, there results point to the area of cognitive-educational interest in relation to the threshold of graphic structure articulation. With results of pedagogical experiences, we are talking about readability as optimal size of the whole set by formal structure. On the other hand, we are talking about the graphc medium and its graphic structure, about tolerance and successfulness of a certain design.
Description of the methods of teaching	Definition of course and aim of research, research plan (methodological and chronological), research results
Description of the means of meeting obligations	Research topic must be elaborated in the form of publication in a relevant journal
Table 3. Detailed list of courses	
Course name	***Computer typography***
Number of lectures	30
general course/ module content;	Classification of typography methods, procedures, programs and program tools. Integration of text and image. Languages and standards in computer typography. Format standards of font entries, code systems and code pages. Definition of characters in bit map vector, and in pixel. Tools and programs for character shaping, paring, hinting. Bézier method. Transformation and morphology in typography. Vectorisation of pixel entries. Methods of optical reading and icon recognition. Aesthetic programs, systems of thickness values of characters, word division program. Program tools of formatting book, offset and newspaper page. Printing graphic machines dependent RIP techniques. Typography specifics depending on display technique and printing: screen display, digital printing, offset coating, microprint. Separation of spot and process colors of characters. Trapping. Typography programming in PostScript. Supplements programmaing for PageMaker and QuarkXpress with application in newspaper page layout. Line graphics. 2D, 3D, continual between-icon transfers. Animation typography.
Description of the methods of teaching	research
Description of the means of meeting obligations	Publication of paper
Table 3. Detailed list of courses	
Course name	***Computational image processing***
Number of lectures	30
general course/ module content;	Classification of processes in printing techniques and media for image processing. Graphic systems of processing, layout and text-image integration. Vector, pixel and fractal graphics. Bézier line. Scanning techniques: analog, digital. Color to the eye, in print, on computer screen and the systems: bitmap, grey scale, duotone, RGB, CMYK, HSB, CIE Lab. Mathematical models and transformations between color systems. Color and light: absorption, reflection of invisible color. Color processing: histogram, saturation, illumination, color tone, color level, contract, inversion. Image processing: selection, trapping, filtration, geometrical transformations, multichannel processing, multilevel processing, live image. Mathematical models of morphological transformations. Vectorisation of image elements. Separation of process colors, color spot, multilayer spot separation. Mathematical models UCRT, GCR, UCA. Raster methods of process and spot colors.

	Program tools of shaping raster elements: spot, rhombus, line, curve, dash, sine, icon. Programming in PostScript.
Description of the methods of teaching	Letures/consultation
Description of the means of meeting obligations	seminar /paper
Table 3. Detailend list of courses	
Course name	Packaging tasks and Bookbinding through time
Number of lectures	15
general course/ module content;	Packaging is almost always a bridge between the producer and the buyer. Although in larger amounts it appears less frequently as a final product available for sale, it is present as a symbol of its period as a cultural, technological and aesthetic phenomenon. It is impossible to separate packaging today from advertising and technological systems, and we can recognize many products for its packaging. Its shape often shows us the country of origin. Systematicality in research of mechanic, organoleptic and technological features of packaging, in combination with materials it is made from, is almost an imperative today in the process of creation, design and application of packaging. During lectures, the students will be introduced to research in mechanical quality packaging and its suitability for packaging certain goods. Research of materials, technologicality, design and suitability for manipulation. Basic requirements of informing, protection, storage, transport capacity, manipulation and, finally, disposal of used packaging. Determining systematicity upon testing, methods of classification, control and saving the obtained results. Usage of existing commercial and specific, custome-made computer programs. Usage of computer programs for packaging from all aspects. Each student independently writes his/her seminar paper, following acquired knowledge in quality control, statistics, packaging production, packaging machinery, environment and economy. Seminar paper is made in PowerPoint, it is defended in front of the whole student year, and submitted on a CD and published on the departmental webpages.
Description of the methods of teaching	Although lectures are envisaged, the teaching is delivered in the form of consultations
Description of the means of meeting obligations	In collaboration with the professor, the student makes a project showing that he/she has learnt the course contents
Table 3. Detailed list of courses	
Course name	Bookbinding through time
Number of lectures	15
general course/ module content;	We always see a book when it is completed. It is almost always the aspect of book content that makes us be aware of the book, and we remember it as a product only when something *unwanted* happens, such as book disintegration, pages missing, empty pages, etc. All this shows us that the book, like any other goods, also has a technology of production, ways of completing it, forms, and, finally, quality. Such a thinking is a compliment to book manufacturers because it has always been known that only a high-quality and professionally made product will remain unnoticed in many aspects; what is notice is the main purpose of the product - with books, this is information. The aim of the course is introducting students with contemporary methods of research, classification, selection, definition and management of affairs in bookbinding production, no matter whether we are dealing with all types of books, magazines, pads, calendars, albums or catalogues. Without any systematic approach to such a production, which culturologically specifies an era, there is a risk of sporadic occurences, because, in the end, we get information on the history of the mankind from the *books* of those times. The book, therefore, is not only

	goods, it is, we might say, a spiritual memory of an era, created regardless its nature – it may be beautiful literature, or a professional book. Systematicity upon testing, methods of classification, control and saving the obtained results. Usage of existing commercial and specific, custome-made computer programs. Usage of computer programs for packaging from all aspects. Each student independently writes his/her seminar paper, following acquired knowledge in quality control, statistics, packaging production, packaging machinery, environment and economy. Seminar paper is made in PowerPoint, it is defended in front of the whole student year, and submitted on a CD and published on the departmental webpages.
Description of the methods of teaching	Although lectures are envisaged, the teaching is delivered in the form of consultations
Description of the means of meeting obligations	In collaboration with the professor, the student makes a project showing that he/she has learnt the course contents
Table 3. Detailed list of courses	
Course name	Quality management
Number of lectures	30
general course/ module content;	Development of quality function. Quality today. Basic concepts in quality area. Quality and metrology. Metrology infrastructure. Authorisation, accreditation, certification. New approach. CE marking. Quality control systems. Basic principles of quality management. Process approach. Environmental management systems. Auditing types. Selfassessment. Selfassessment surveys. Rewards for quality. Methods of priority choice. FMEA. QFD. Methods of quality improvements. Quality expenses. Kaizen. Kanban. Poka Yoke. Quality improvement program “Six sigma”. Basic assuptions of modern quality control.
Description of the methods of teaching	consultations
Description of the means of meeting obligations	Exam/paper
Table 3. Detailed list of courses	
Course name	**PHYSICAL AND CHEMICAL PROPERTIES OF PRINTING COLORS**
Number of lectures	30
general course/ module content;	Physical properties of printing colors before and during printing; rheology and viscosity. Effect of color additives to theological behaviour: viscosity curve features, shear force, fluidity, extensibility, glutinosity. Relation between capillary forces of supstrates and physical-chemical features of printing colors. Calculation of capillary forces – Washburn and Dawdson mathematical expression. Choice and physical-chemical features of additives based on rheological behaviour and adhesive and cohesive forces features on printed supstrate. Environmental parameters in choice of printing colors; toxicity and biodegradability of colored components.
Description of the methods of teaching	- lectures - laboratory exercises
Description of the means of meeting obligations	- active participation in classes - project assignment

Table 3. Detailed list of courses	
Course name	COMMUNICATION SCIENCE GRAPHIC COMMUNICATION
Number of lectures	30
general course/ module content;	Structural and historical laws of communication science. Traditional communication theories, information theory, developmental communication science and graphic communication. What is the subject of research in graphic communication? Graphic communication as a new scientific-praxeological paradigm of developmental communication science at all levels of graphic communication: global, regional, national and local. Graphic communication and communication interaction. Interactive graphic communicational understanding. Social graphic paradigm and communicational system integration. Graphic communication and intercultural strategic interacion. Basic graphic theories of communicating. Graphic-communicational models. Graphic-praxeological communication paradigms. Cultural obstacles and cultural dimensions of graphic communication. Domination of great graphic cultures. Pan-european perspective of graphic media and graphic communication. Graphic communication and messages without words. New graphic technologies, spreading the net of internet citizens and digital communicative graphic future. Alternative communicological-graphic channels. Communication science and mutual media culture and graphic communications.
Description of the methods of teaching	Consultative course
Description of the means of meeting obligations	Final seminar paper and oral exam

Table 3. Detailed list of courses in the doctoral program	
Course name	GRAPHIC DESIGN OF MEDIA CAMPAIGNS
Number of lectures	30
general course/ module content;	Ethological aspects of graphic design, media campaigns, behaviour, acting and survival of media campaigns. Graphic design and symbolic systems of total media activities. Media campaigns and the menacing „graphic design“ in the world of chaos and life. Graphic design and media dialectics of words and power. Graphic communication as a struggle for media dominance. Graphic design and dominant communication in media. Media campaigns and graphic design as the symbols of contemporary advertising activities. Theoretical origins of media marketing. Graphic design from the integral media marketing perspective. Graphic design and continuous political competition in the media. Media image and market graphic design. Media identity (profile, professionality, individuality, uniqueness, reputation, recognition, honour, good name, respect) and the illusion of graphic design in media campaigns. Graphic designer – new media vocation, profession or media marketing. Graphic design and media actiona and campaigns. Fear in media and the fight for survival of media campaigns. Graphic design and the «think-tank» media form of campaigns at all levels of media communication: books, film, newspapers, news agencies, radio, television, new media, the internet.
Description of the methods of teaching	Consultative course
Description of the means of meeting obligations	Final seminar paper and oral exam

Table 3. Detailed list of courses

Course name	QUALITATIVE METHODOLOGY IN GRAPHIC SCIENCE
Number of lectures	25
general course/ module content;	Qualitative methodology as a new paradigm of graphic science. Graphic science as a process of qualitative discursive competitveness. Qualitative holistic approach to graphic science methodology. Cognition/knowledge, question of method, quantitative, qualitative, research methods and graphic science. Observation, interviews, surveys, scalers, content analysis processes, tests, standard instruments ofr graphic science evaluation, topics and contents of qualitative graphic methodology. Creation of graphic ideas, analysis, structure, cooperation, acceptance of ideas, application of ideas, responsibility, making of results. Qualitative methodological approaches to graphic science: seeing and selecting problems, defining probles, evaluation criteria, state definition, state examination, solution optimalisation, solution formation, solution implementation, systematisation of existing experiences, formation of graphic project and graphic project evaluation. Identification, selection and development of human resources in graphic science. Plan, procedures and methods of qualitative research: hypothesis, goals, methods, protocol and plan of research, keywords and research ethics. Logical argumentation and elaboration of final paper in graphic field.
Description of the methods of teaching	Consultations
Description of the means of meeting obligations	Logical argumentation and final paper in graphic field.