

Engineers and information literacy: an oxymoron or a need? Academic and information literacy for future engineers

Vrkić, Dina; Petrak, Jelka; Macan, Bojan

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Engineers and information literacy: an oxymoron or a need?

Academic and information literacy for future engineers

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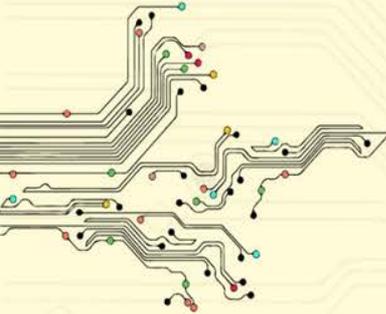
Agenda

- Engineering study background
- Research, Publications and Responsibility in Science
 - Syllabus outline
- New examination model
- Future plans

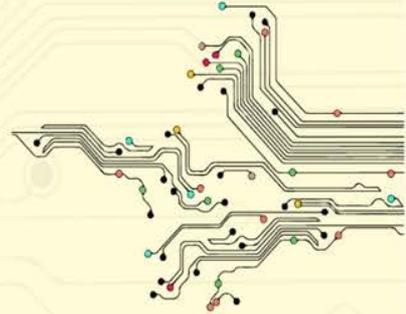
Engineering study background

- Recommended master programme at Faculty of Electrical Engineering and Computing (FER)
 - Duration of each Master program at FER is 2 years

Courses	ECTS	%
Theoretical courses (T)	25	21%
Specialization courses (S)	20	17%
Elective courses, Seminar and Project (I)	23	19%
Mathematics and science courses (M)	8	7%
Humanistic or social courses (D)	6	5%
Laboratories profile (L)	8	7%
Master Thesis (Z)	30	25%
	120	



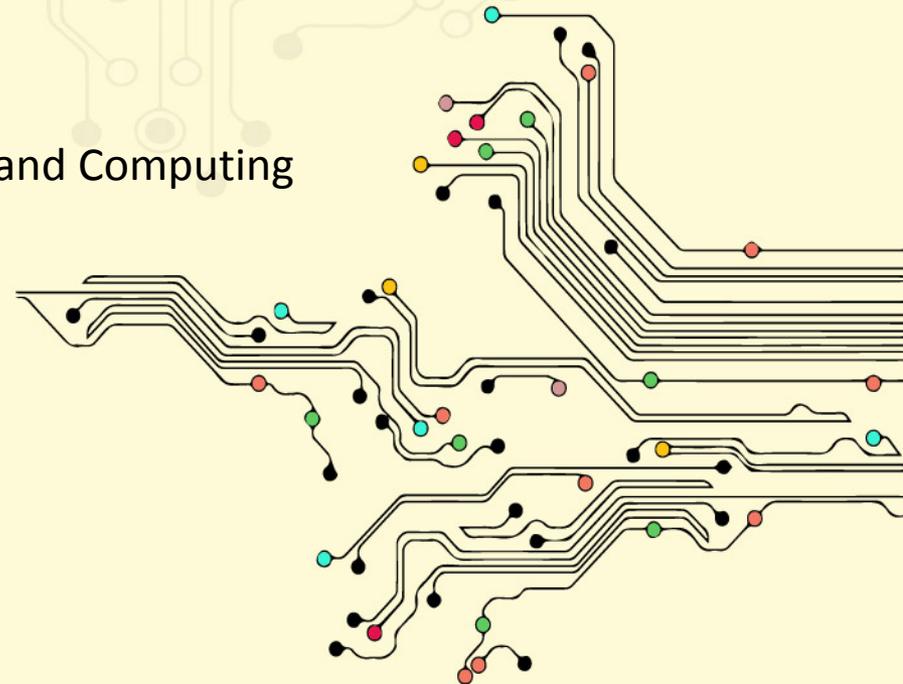
Research, Publications and Responsibility in Science



- Started in Academic Year 1998/1999 under name: *Methodology and presentation of research results*
- Renamed into *Research, Publications and Responsibility in Science* Academic Year 2003/2004
- Stand-alone credit course (2 ECTS) – 15 weeks, Summer semester
- Grading system (1-5)
- Forms of teaching
 - Lectures with discussions
- Assessment measures
 - Continuous assessment
 - Homework
 - Quizzes
 - Participation in class
 - Student survey
 - Exam

• Teaching staff :

- Head of the Central Medical Library, School of Medicine, University of Zagreb
- Head of the Department of Medical Informatics of University of Rijeka
- Head of the Technology Transfer Office at Centre for Research, Development and Technology Transfer at University of Zagreb
- Head of the Library, Institute Ruđer Bošković
- Research assistant at the Institute for Social Research in Zagreb
- Librarian at the Central Medical Library, School of Medicine, University of Zagreb
- ✓ Guest scientist from
the Faculty of Electrical Engineering and Computing



Syllabus outline

Week	Title lectures	Continous assessment
1.	Science and scientific research	Student survey
2.	Methodologies and types of scientific research	
3.	Responsible conduct of research	
4.	Data collecting and analysis	
5.	Publishing results	
6.	Critical appraisal of article	
7.	Evaluation of scientific work	
8.	Mid term exam: written (multiple choice test)	
9.	Literature search	Quizz – Group 1
10.	Reference managers	Quizz – Group 2
11.	Intellectual property in the research, development, innovation and technology 1	Quizz – Group 3
12.	Intellectual property in the research, development, innovation and technology 2	Participation in class Via Moodle
13.	Web and research	
14.	Talk with a scientist	
15.	Final exam: written (multiple choice test)	Student survey

Homework

Objectives and learning outcomes

Identify basic principles of scientific thinking and research

Explain the structure of a scientific paper

Describe the process of publishing of a scientific paper

Searching of information sources

Critical evaluation of information sources

Identify basic principles of responsible conduct of research

Describe the procedure for granting patents

» predmet » ipouz Naslovnica Pretraživanje English AA

ISTRAŽIVANJA, PUBLIKACIJE I ODGOVORNOST U ZNANOSTI

Osnovni podaci Detaljne informacije Nastava

Šifra: 46418
ECTS: 2

Nositelji: Prof. dr. sc. Jelka Petrak

Prijava ispita: Studomat

Engleski jezik: Nastavnik nije u mogućnosti ponuditi nastavu na engleskom jeziku.

REPOZITORIJI

- Domaće zadaće (2)
 - Upute za izradu domaćih zadaća [510,24 KIB]
 - Predložak rada (DZ IPOUZ) [32,57 KIB]
- Informacije o predmetu (1)
 - Informacije o predmetu [289,09 KIB]
- Predavanja (9)
 - Vrednovanje znanstvenog rada [372,65 KIB]
 - Upravljanje referencama [781,38 KIB]

OBAVIJEŠTI

Kratka provjera znanja 09.05.2013. u 09:39

Official course site:

- News
- Communication (forum, comments)
- Resources

IBOJAVIJEŠTI

Kratka provjera znanja 09.05.2013. u 09:39

Istraživanja, publikacije i odgovornost u znanosti

Termini ovise u rasporedu

Termin 1: 15. svibnja
Termin 2: 22. svibnja
Termin 3: 29. svibnja

Međuispit

Prikupljanje i obrada podataka

Podsjecamo vas na održa i obradu podataka profesor

Dodite u što većem broju!

DATA: BY THE NUN

NUMBER OF YEARS TO GET DATA: 3

YES! FINALLY!

Moodle course site:

- Student survey
- Quizzes
- Resources
- Distance learning

Navigation

Moja naslovnica

- Naslovnica sustava
- Stranice na razini sustava
- Moj profil
- Trenutni kolegij
 - IPOUZ
 - Sustonići
 - Izveštaji
 - Općenito
 - Znanost i znanstveno istraživanje
 - Metodologija i vrste znanstvenog istraživanja
 - Odgovorna provedba istraživanja
 - Prikupljanje i obrada podataka
 - Objavljivanje rezultata istraživanja
 - Pretraživanje znanstvene literature
 - Kritička ocjena znanstvenog članka
 - Međuispit
 - Vrednovanje znanstvenog rada
 - Upravljanje referencama
 - ... pitanja, FREKVOU inovacija i transferu tehnologije 1
 - ... pitanja, razvojno inovacija i transferu tehnologije 2
 - Znanost i web
 - Razgovor sa znanstvenikom 1: Mario Čifrek
 - Moji kolegiji

Postavke

- Administracija kolegija
- Omogućiti izmjenu
- Uredi postavke
- Korisnici
- Filteri
- Ocjene
- Backup
- Vraćanje kolegija
- Drvo
- Reset
- Resetiranje

News forum

Znanost i znanstveno istraživanje

Metodologija i vrste znanstvenog istraživanja

Odgovorna provedba istraživanja

Prikupljanje i obrada podataka

Objavljivanje rezultata istraživanja

Pretraživanje znanstvene literature

Kritička ocjena znanstvenog članka

Međuispit

Vrednovanje znanstvenog rada

Upravljanje referencama

Intelektualno vlasništvo u istraživanju, razvoju inovacija i transferu tehnologije 1

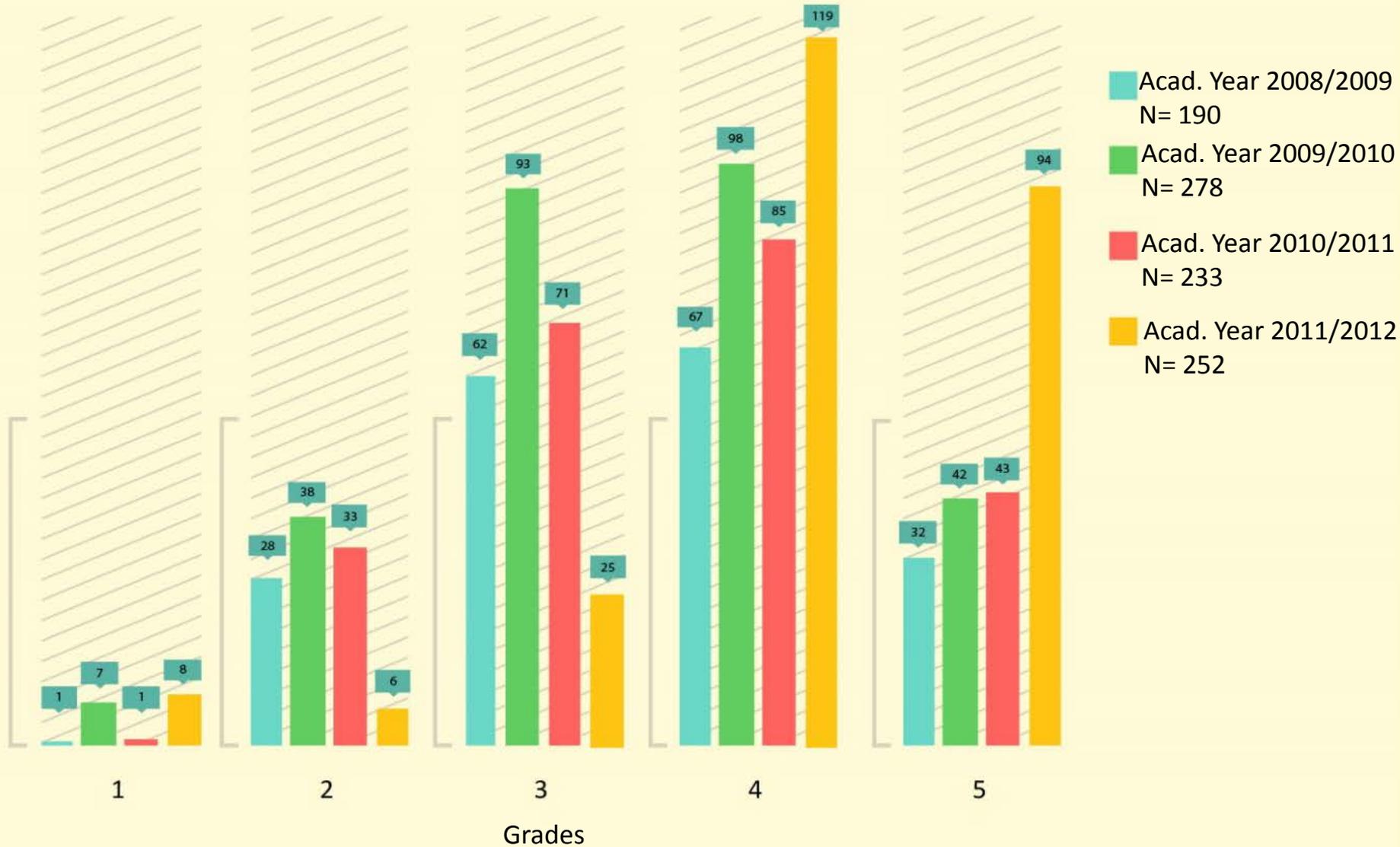
Intelektualno vlasništvo u istraživanju, razvoju inovacija i transferu tehnologije 2

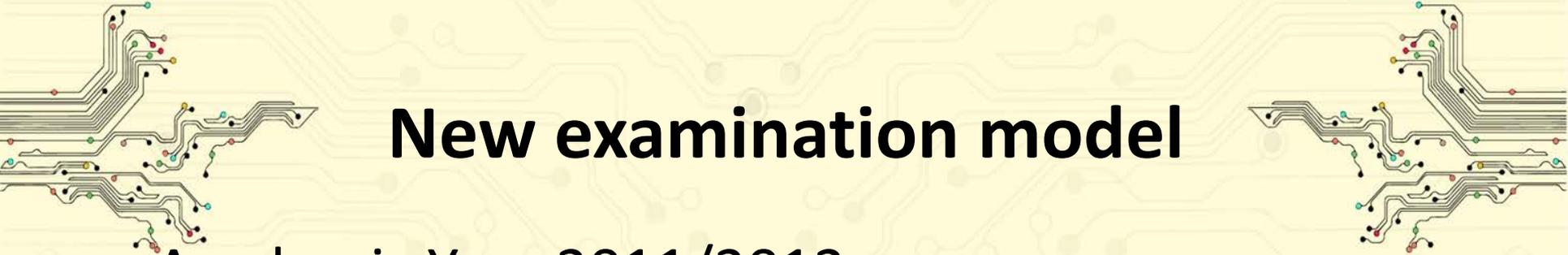
Znanost i web

Razgovor sa znanstvenikom : Mario Čifrek

Students' grades in the 2008-2012 period

Number of students





New examination model

- Academic Year 2011/2012
- First attempt: **submitting** a scientific paper
- Two part homework
 - 1st part (HW1): finding answer to assigned task by searching different bibliographic databases and FER library catalog
 - 2nd part (HW2): submitting results of the HW1 to the fictional „Library & Information Science Journal” using the **Open Journal Systems**:
 - Register as an author
 - Write a covering letter to the editor
 - Upload & send

Results

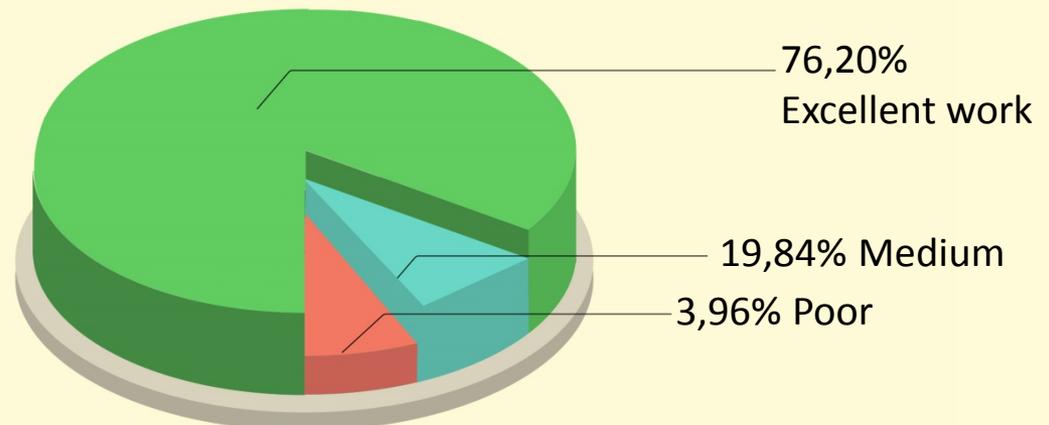
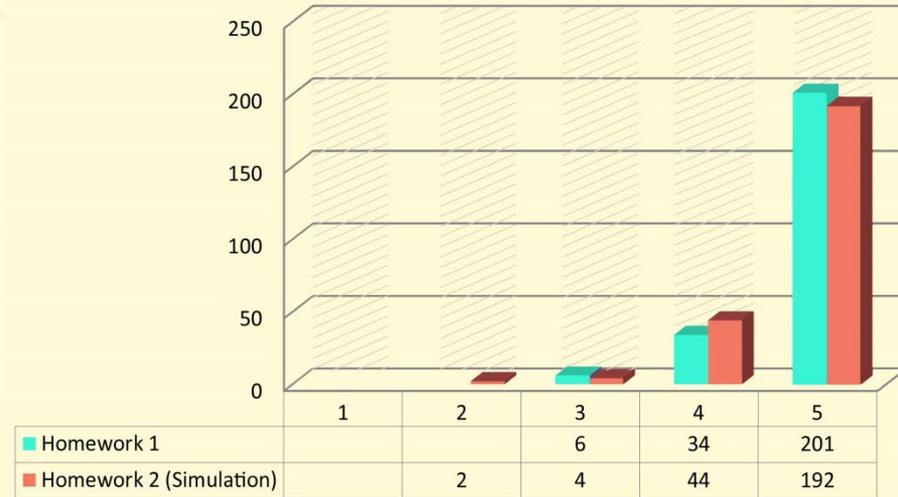
- Number of students = 252

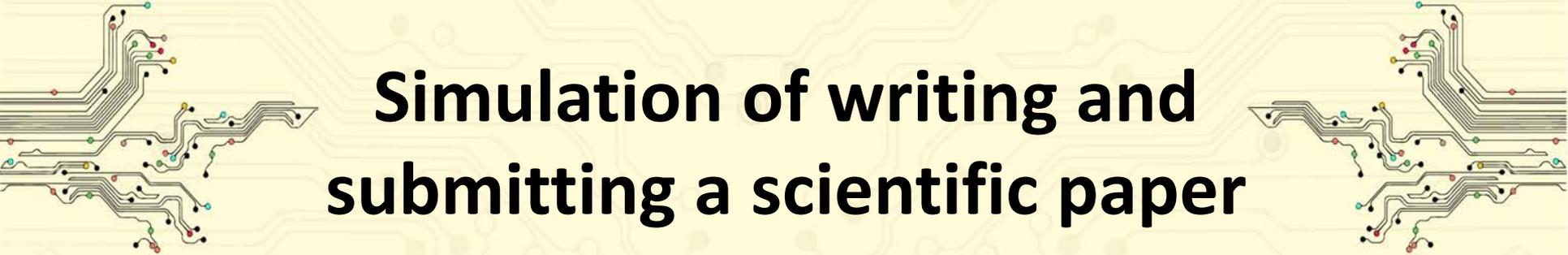
- 242 fulfilled homework
- Grading: 1-5 points

- Weakest segments:

- Covering letter to the editor:
 - No letter at all
 - Improper expressions
 - What's up, my homework is..."
- Forgot to upload homework

HW1 and HW2





Simulation of writing and submitting a scientific paper

- Academic Year 2012/2013
- Homework (individual)
- Time to fulfill: 6 weeks
- Language: Croatian
- Objective: apply all lessons learned
- Homework topic is not pre-defined
 - Students can use **their** old seminar papers, articles, project materials,...

- Created custom template of a scientific paper
 - Based on [IEEE Transactions and Journals](#)

Explained in detail parts of the article template



> REPLACE THIS LINE WITH YOUR PAPER IDENTIFICATION NUMBER (DOUBLE-CLICK HERE TO EDIT) < 1

Library & Information Science Journal, Volume 1 (2013)

Preparation of Papers for IEEE TRANSACTIONS and JOURNALS (November 2012)

Naslov članka

First A. Author, *Fellow, IEEE*, Second B. Author, and Third C. Author, Jr., *Member, IEEE*

Ime Prezime, *Ustanova*, JMBAG :

Abstract—These instructions give you guidelines for preparing papers for IEEE Transactions and Journals. Use this document as a template if you are using Microsoft *Word* 6.0 or later. Otherwise, use this document as an instruction set. The electronic file of your paper will be formatted further at IEEE. Paper titles should be written in uppercase and lowercase letters, not all uppercase. Avoid writing long formulas with subscripts in the title; short formulas that identify the elements are fine (e.g., “Nd-Fe-B”). Do not write “(Invited)” in the title. Full names of authors are preferred in the author field, but are not required. Put a space between authors’ initials. Define all symbols used in the abstract. Do not cite references in the abstract. Do not delete the blank line immediately above the abstract; it sets the footnote at the bottom of this column.

Index Terms—Enter key words or phrases in alphabetical order, separated by commas. For a list of suggested keywords, send a blank e-mail to keywords@ieee.org or visit http://www.ieee.org/organizations/pubs/ansi_prod/keyword98.txt

I. INTRODUCTION

THIS document is a template for Microsoft *Word* versions 6.0 or later. If you are reading a paper or PDF version of this document, please download the electronic file, TRANS-JOUR.DOC, from the IEEE Web site at <http://www.ieee.org/web/publications/authors/transjnl/index.html> so you can use it to prepare your manuscript. If you would prefer to use LATEX, download IEEE’s LATEX style and sample files from the same Web page. Use these LATEX files for formatting, but please follow the instructions in TRANS-JOUR.DOC or TRANS-JOUR.PDF.

If your paper is intended for a conference, please contact your conference editor concerning acceptable word processor formats for your particular conference.

II. GUIDELINES FOR MANUSCRIPT PREPARATION

When you open TRANS-JOUR.DOC, select “Page Layout” from the “View” menu in the menu bar (View | Page Layout), (these instructions assume MS 6.0. Some versions may have alternate ways to access the same functionalities noted here). Then, type over sections of TRANS-JOUR.DOC or cut and paste from another document and use markup styles. The pull-down style menu is at the left of the Formatting Toolbar at the top of your *Word* window (for example, the style at this point in the document is “Text”). Highlight a section that you want to designate with a certain style, then select the appropriate name on the style menu. The style will adjust your fonts and line spacing. Do not change the font sizes or line spacing to squeeze more text into a limited number of pages. Use italics for emphasis; do not underline.

To insert images in *Word*, position the cursor at the insertion point and either use Insert | Picture | From File or copy the image to the Windows clipboard and then Edit | Paste Special | Picture (with “float over text” unchecked).

IEEE will do the final formatting of your paper. If your paper is intended for a conference, please observe the conference page limits.

A. Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have already been defined in the abstract. Abbreviations such as IEEE, SI, ac, and dc do not have to be defined. Abbreviations that incorporate periods should not have spaces: write “C.N.R.S.,” not “C. N. R. S.” Do not use abbreviations in the title unless they are unavoidable (for example, “IEEE” in the title of this article).

B. Other Recommendations

Use one space after periods and colons. Hyphenate complex

Sažetak—Sažetak upućuje na sažeti prikaz članka ili djela, nema obilježja i namjenu zaključka. U sažetku se iznosi pregled, odnosno vrlo kratak sadržaj cjelokupno izložene tematike. Njegova namjena je dvostruka: mora poslužiti javnosti kao informacija o nekom djelu i omogućiti čitateljima da brzo spoznaju bitna obilježja nekog djela i na taj način ustanove je li za njih djelo zanimljivo i da li će ga pročitati. Ne sadrži reference, tablice, slike i skraćenice.

Ključne riječi—Riječi ili fraze koje odražavaju sadržaj i postupak opisan u radu. Uvrštavaju se abecednim redom i odvajaju se zarezom. Popis predloženih riječi možete pregledati na: http://www.ieee.org/organizations/pubs/ansi_prod/keyword98.txt.

I. UVOD

Uvod kao početni i pristupni dio rada trebao bi predstavljati prvi dio znanstvenog rada. Kod pisanja uvoda treba u cijelosti doći do izražaja autorova inventivnost, a na njemu je da izabere najadekvatnije načine na koje će prići temi i zainteresirati čitatelja za nju.

Važno je u uvodu: 1) precizirati predmet rada (o čemu se u radu piše, odnosno problem ili probleme koji će se obrađivati), 2) definirati pojmove (sadržane u naslovu ili navesti druge podatke) – naznačiti je li rad teorijske, praktične ili eksperimentalne prirode, 3) dati (povijesni) pregled istraživanja (literature) koja su prethodila radu, teorijsku podlogu rada, odnosno kritički osvrt na postojeću literaturu (izvori informacija i spoznaja o temi koja se istražuje) kako bi se ustvrdilo stanje i doseg znanosti u istraživačkom području, 4) objašnjenje kako je istraživač došao do teme i pitanja koja razmatra, 5) dati okvir istraživanja koje se provodi.

znanstvenih metoda kojima se istražuju i otkrivaju znanstvene spoznaje jesu: 1) objektivnost, 2) pouzdanost, 3) preciznost, 4) sustavnost i 5) općenitost.

Preporučeni opseg je 10-15%.

III. REZULTATI

Rezultati su dio rada u kojem autor navodi rezultate koje je dobio, odnosno ono do čega je istraživanjem došao. Oni se mogu prezentirati riječima ili grafički. Moraju biti jasno naznačena kretanja, razlike i rezultati statističkih testova ako su korišteni. Taj dio rada obično nije dug iako je vrlo važan jer on je srž onoga što je novo ili važno u radu. Rezultati ili dobiveni pokazatelji analiziraju se s obzirom na postavljenu hipotezu/hipoteze i pitanja koja su navedena u uvodu. Znanstvenika odlikuje poštenje i istinoljubivost pa nepristrano navodi i rezultate i primjere koji idu, kao i one koji ne idu u prilog hipotezi koju je postavio [1].

Preporučeni opseg 10-15% rada.

IV. RASPRAVA

Dio je članka u kojem autor komentira, interpretira i procjenjuje dobivene rezultate i odnose među njima, odnosno objašnjava što oni znače u odnosu prema postavljenoj hipotezi i relevantnoj literaturi. Tu se uspoređuju rezultati istraživanja provedenih za potrebe rada s eventualnim rezultatima dobivenim u sličnim ispitivanjima, ali i primjenom drugih metoda te koliko se slažu ili mijenjaju prijašnje spoznaje o ispitivanom problemu [1].

Preporučeni opseg 20% rada.

V. ZAKLJUČAK

Original

Modified and translated



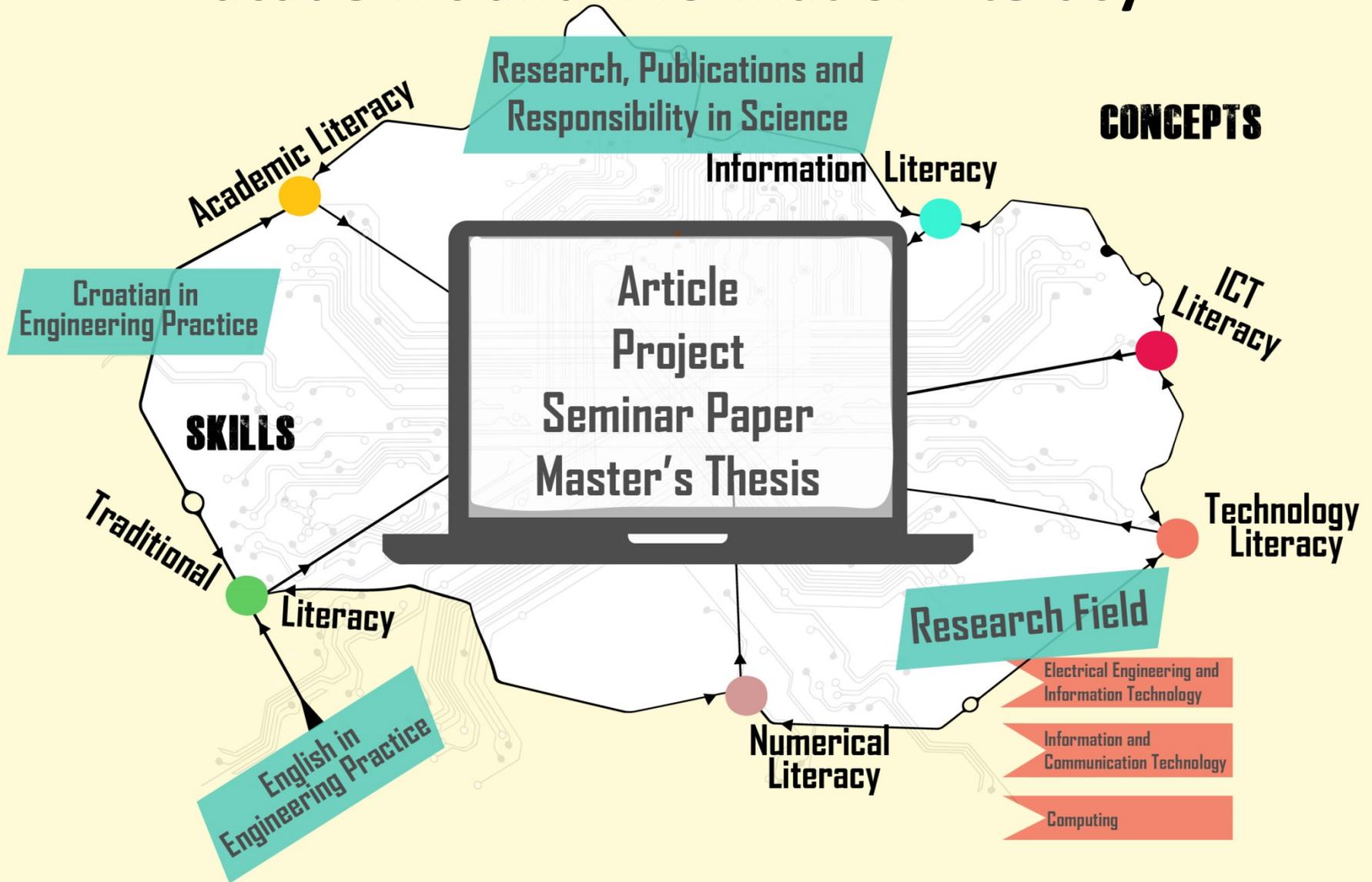
Assignment description:



- Use template for technical guidelines
- Maximum of 4 pages
- Language and style of writing
- Proper citing of relevant sources
- At least 5 references
- Follow instructions for authors
- Respect principles of academic integrity and responsibility
 - In case of plagiarism all points will be deducted
- Submit article to the „Library & Information Science Journal”

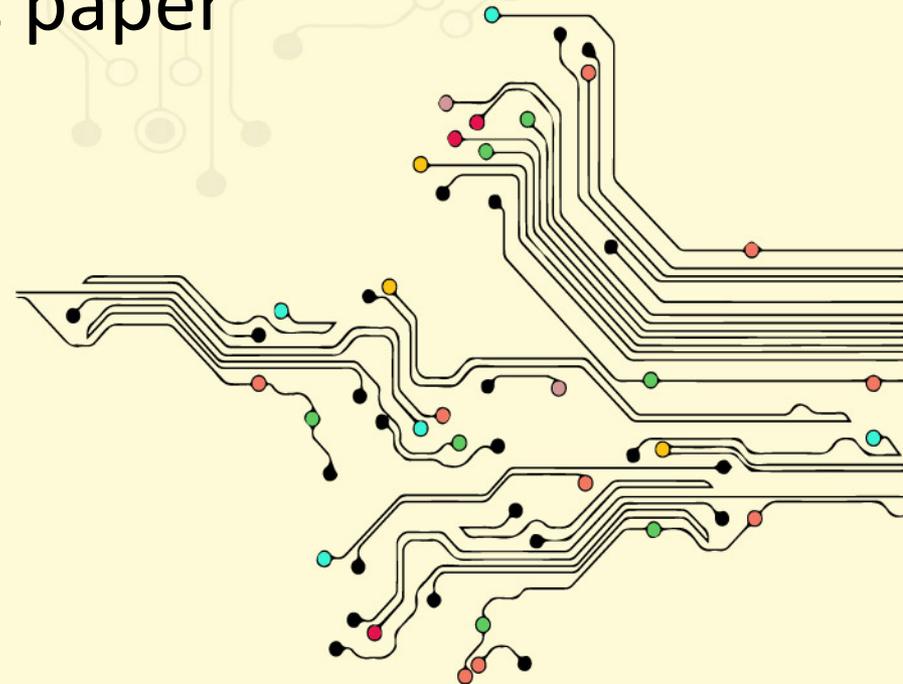


Long-term model for teaching academic and information literacy



Future plans...

...continue with the simulation of writing and submitting a scientific paper



Thank you!
Questions?

