

How to find resources for engineering disciplines and physical sciences

The Library of Kaunas University of Technology biblioteka@ktu.lt



Aim

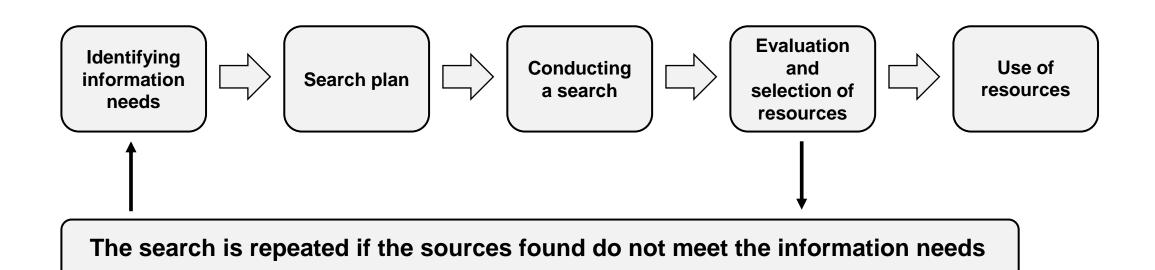
To introduce you to:

- □ information search strategy;
- the choice of keywords and projecting an effective inquiry;
- the search of information in KTU virtual library;
- the search of e-books;
- the search of articles online;
- the search of patents and standards;
- □ the search of information in open access resources.



Stages in the search for information

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Identifying information needs





Before beginning to write scientific work:

- ✓ conduct information search;
- ✓ look for the information in encyclopaedias, reference books and dictionaries;
- ✓ look through books, scientific articles (carry out search in databases).

Collected information should help you:

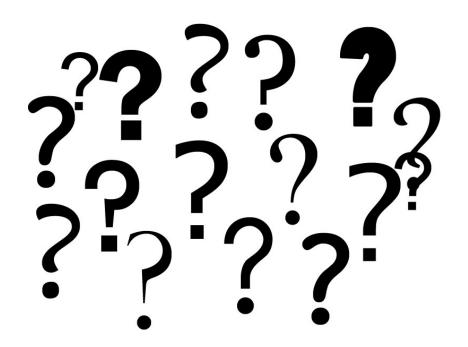
- ✓ to reveal wider and narrower spheres of the topic;
- ✓ to describe the aim and problem;
- ✓ to find concepts, terms and their synonyms, which while looking for information could be used as keywords.

Search plan

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Before carrying out a search of information, answer these questions:

- ✓ How recent does the information need to be?
- ✓ What type of information sources do you need?
- ✓ What sort of information sources do you need?
- ✓ What format of information is necessary?
- ✓ Which languages will you use for the search?
- ✓ How much information do you need?
- ✓ How much time will you devote to research?

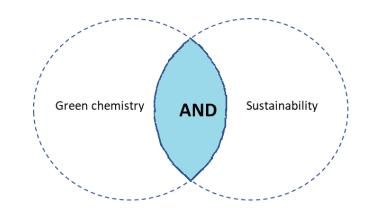


Searching for information

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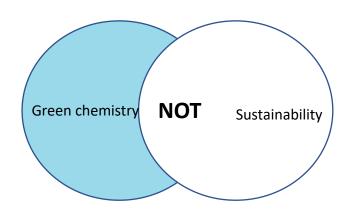
- ✓ State the essence of information search in one or two sentences, highlight the specifics of the topic;
- ✓ identify keywords and distinguish main concepts and terms;
- ✓ select synonyms and different forms of the words, alternative terms;

✓ use logical operators (Boolean logic) (AND, OR, NOT, * , " " , ?).



Sustainability

Green chemistry



Choosing the keywords

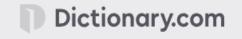
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Various information publications:

- encyclopedias, reference books, dictionaries
- dictionaries and encyclopedias available online:
 - ✓ AccessScience
 - ✓ <u>Dictionary.com</u>
 - ✓ Encyclopedia.com
 - ✓ Online Translation Tools
 - ✓ Reference.com
 - ✓ Word Web Online

Thesaurus (general or specific field dictionaries, which show meaningful connections between words):

- ✓ Thesaurus.com
- ✓ <u>EUROVOC</u> the translations of terms in four languages, topic by topic and alphabetical dictionary
- ✓ Merriam-Webster
- ✓ <u>UNESCO Thesaurus</u>
- ✓ Academic Search Complete (through EBSCO) the list of terms related to the subject
- ✓ <u>IEEE Approved Indexing Keyword List</u>





Advice ktu

- ✓ It is impossible to find all relevant information sources.
- ✓ It is very important to keep balance between quantity and quality.
- ✓ There is no right solution, best search tool or the only keyword.
- ✓ You can change your search strategy. Write down selected keywords, search tools, etc.
- ✓ Save the relevant documents and information about them and make notes.
- ✓ You can always ask a librarian for advice.



Choosing a search tool

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- ✓ virtual libraries;
- ✓ institutional publication ETD (Electronic Thesis or Dissertation) databases;
- √ databases;
- √ subscribed databases;
- ✓ open access resources;
- ✓ specialised search systems.



Selection of resources

Revision of the search

The aspects of information quality:

- ✓ reliability
- ✓ The authorship of the resource;
- √ resource;
- ✓ newness;
- ✓ publisher;
- ✓ sources cited.

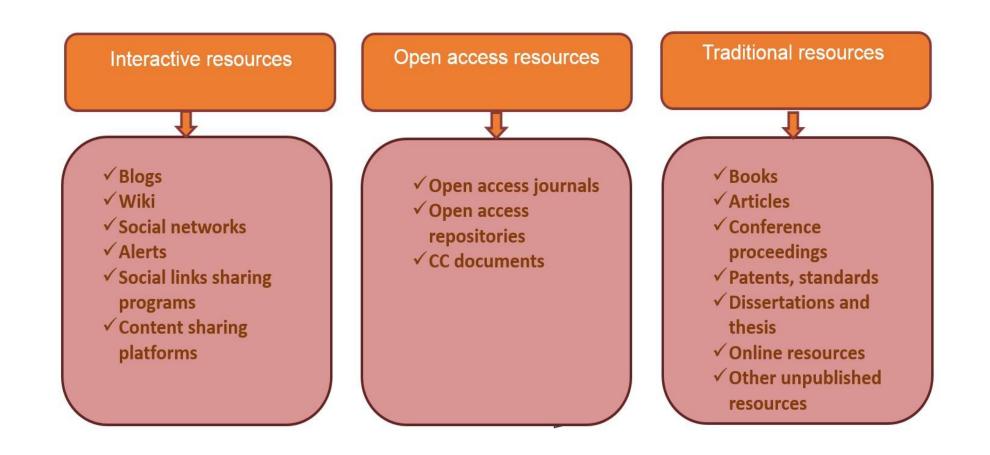


The search is the process that may be repeated. If the results of the search do not satisfy, it is advised:

- ✓ to look through the spelling of the keywords;
- ✓ to check other keywords;
- ✓ to evaluate the suitability of the chosen tool;
- ✓ to repeat the search from the first step.

Variety of information resources

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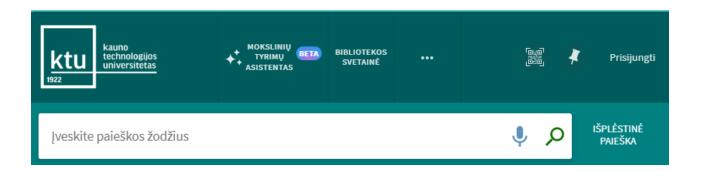


Where to begin the information search?

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The library offers:

- > KTU virtual library vb.ktu.edu
- > Subscribed databases
- Open access resources



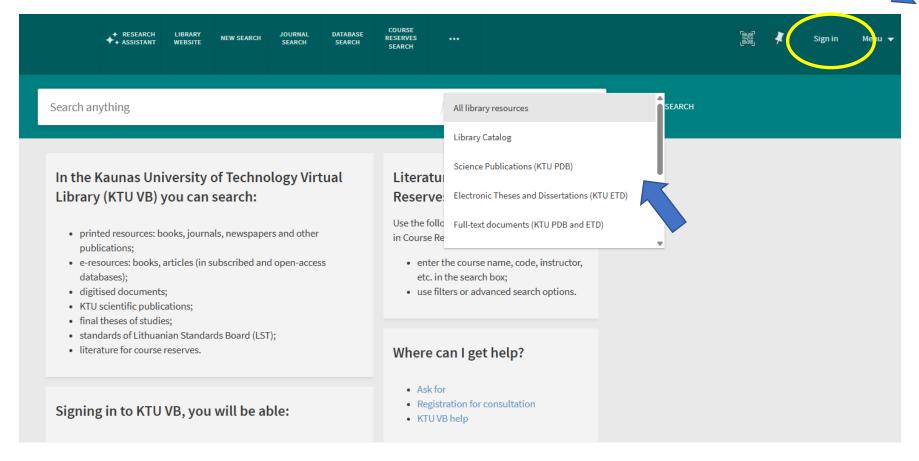




Search in KTU Virtual Library

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Search based on one slot where information needs to be typed in to find all resources of KTU library



Filters of search results

Tweak my results

Availability ^

Held by library

Open Access

Peer-reviewed Journals

Refine

Available online

Creation Date ^

From То

1701 2025

Language ^

Lithuanian

Undetermined

Japanese

Chinese

Spanish

Portuguese

Russian

Arabic

Persian

Indonesian

Resource Type ^

Journals

Rare books

Bachelor's Theses

Master's Theses

Book chapters

Magazine Articles

Reviews

Reference Entries

Datasets

Web Resources

Reports

Text Resources

Newsletter Articles

Other

Government Documents

Books

Conference Proceedings

Articles



Subject ^

Green chemistry

Catalysis

Chemical engineering

Industrial Chemistry/Chemical Engineering

Environmental chemistry

Nanotechnology

Biotechnology

Organic Chemistry

Sustainable development

Sustainable engineering

Nanostructured materials

Chemistry, Organic

Research & information: general

Composite materials

Renewable and Green Energy

Organic compounds Synthesis

Renewable energy resources

Biomass energy

Environmental engineering

Science & Technology

Physical Sciences

Life Sciences & Biomedicine

Technology

Chemistry, Multidisciplinary

Science & Technology - Other Topics

Collection ^

MEDLINE

Elsevier ScienceDirect Journals Complete

DOAJ Directory of Open Access Journals

EBSCOhost Academic Search Ultimate

Springer Nature - Complete Springer Journals

Wiley Online Library - AutoHoldings Journals

American Chemical Society Journals

Royal Society Of Chemistry Package Gold

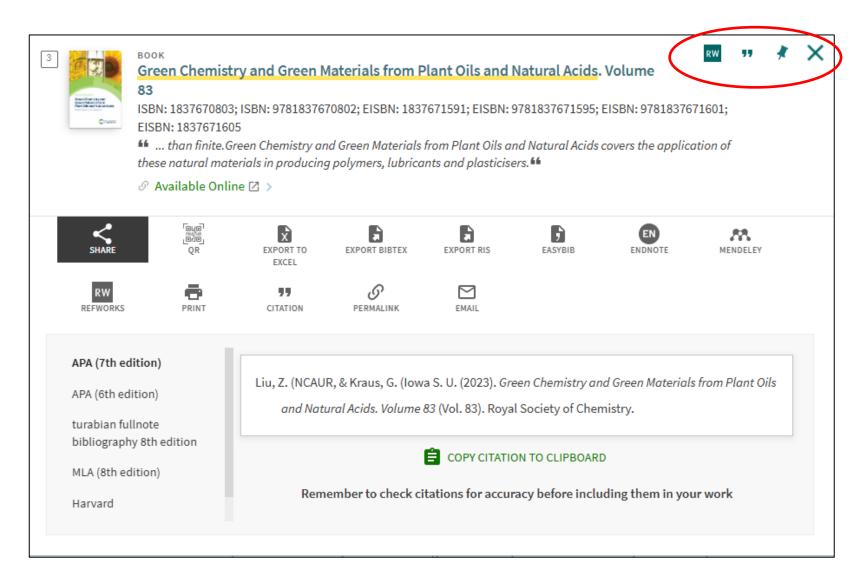


Expand My Results

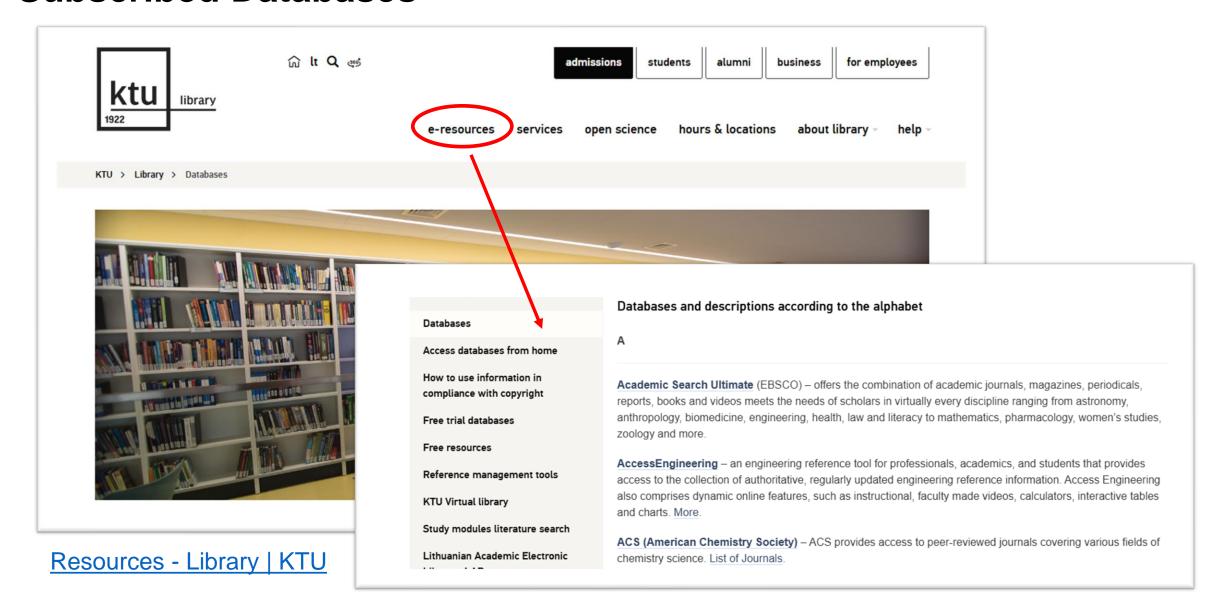
Saving the search results

For more information on quotation and bibliographical reference tools, you can find them on library webpage:

Library – trainings



Subscribed Databases



Databases. Access from home

The databases can be accessed from home using one of the following options:

- KTU Virtual Library using the KTU single sign-on.
- Use <u>remote Ezproxy access</u> log in with the KTU single sign-on and select the desired database from the list provided.

From University computers or wireless internet, you can access the subscribed databases directly without using login details.

Users are allowed

- ✓ Use electronic resources for studies or research without infringement of copyright laws.
- ✓ Use electronic resources (download/print/copy to an external hard drive) only for personal usage and in small quantities. In case user downloads too many resources his IP address might be blocked by database providers.

Users are not allowed

- ✓ Use the software that allows to download and save information on the computer.
- ✓ Upload the information from the subscribed databases online; share the information with the third parties or use the information for commercial purposes.

The search of books in databases

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<u>eBook Academic Collection</u> (EBSCO) - database of e-books with various topics.

<u>eBook Open Access (OA) Collection</u> (EBSCO) - This is the set of books of various disciplines, created in collaboration with university press and open resource publishers. It gives access to more than 2,500 e-books on various topics.

<u>ProQuest Ebook Central</u> - more than 200 thousand books of technological, physical, biomedical, social and humanity sciences.

ScienceDirect E-Books - full collection of e-books of various scientific fields.

<u>Springer Nature Link eBooks</u> - access provided to *Business & Management, Economics & Finance, Chemistry & Materials Science, Computer Science, Engineering* e-book collections.

<u>Wiley Online Library eBooks</u> - access to e-books on the topics related to finances, marketing, engineering, physics, informatics, chemistry and other sciences.

The search of articles in databases

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<u>Academic Search Ultimate</u> (EBSCO) - offers the combination of academic journals, magazines, periodicals, reports, books and videos in every discipline ranging from astronomy, anthropology, biomedicine, engineering, health, law and literacy to mathematics and more.

<u>Emerald Premier eJournals Collection</u> - peer-reviewed journals with full text articles in social science and engineering.

<u>ScienceDirect Journals</u> - database contains the full-text of Elsevier Science journals in fields of Science and Social Sciences. Full-text access is available back to 2012.

<u>Springer Nature LINK Journals</u> - peer-reviewed journals published by *Springer Verlag* and *Kluwer Academic Press*. Database covers topics in various disciplines..

<u>Taylor & Francis e Journals</u> - peer-reviewed journals in various fields of Sciences, Social Sciences and Humanities. Access provided to issues published back to 1997.

<u>Wiley Online Library eJournals</u> - access to *Wiley* publishing house journals. Access to <u>483 journals</u> until 2013, as well as STM (Science Technology Medicine: <u>417 journals</u>).

<u>Nature</u> - access to four subscribed, highly-regarded, weekly journals on physical and engineering sciences (access is granted to the volumes from 2006 till now).

The search of articles in specialized databases

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<u>IEEE Xplore</u> - Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Electrical Engineers (IEE) published journals, conference proceedings, standards and other publications since 1988.

<u>IOP science</u> - a database published by Institute of Physics providing a full-text articles from peer-reviewed journals in physics, mathematics and related disciplines.

<u>Reaxys</u> - a unique web-based chemistry database consisting of deeply excerpted compounds and related factual properties, reaction and synthesis information as well as bibliographic data, navigated and displayed via an actionable interface.

<u>SciFinder-n</u> - database of chemistry, which provides information about materials, including their chemical reactions, chemical names, properties, comercial availability and regulation, chemical reactions, patents (*PatentPak*).



The search in open access resources









Google books http://books.google.com - full text books read just online, they cannot be downloaded, printed or saved.

DOAB (*Directory of Open Access Books*) http://www.doabooks.org - open access resource to the catalogue of books.

DOAJ (*Directory of Open Access Journals*) http://www.doaj.org - open access journal catalogue. The journals included in this catalogue ensure free access to full text articles. This catalogue includes more than 13,000 journals.

HighWire Press https://portal.highwire.org/lists/devecon.dtl - is created and supervised by Stanford University in the USA. Open Access journals marked as free.

The search for articles in open access resources

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National repository: The Lithuanian Academic Electronic Library (eLABa)

BioMed Central http://www.biomedcentral.com: open access journals of medicine, biology, biomedical engineering and biotechnology, e.g. BioMedical Engineering OnLine, Biotechnology for Biofuels, BMC Biotechnology, Journal of Biological Engineering, Journal of Biomedical Science, Journal of Nanobiotechnology, etc..

PLoS (Public Library of Science) http://www.plos.org - is a nonprofit publisher of openaccess journals in science, technology, and medicine and other scientific literature.







The search engines of scientific information

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Google Scholar - a worldwide scientific information search engine.

Reviewed resources (articles, dissertations, books, summaries, etc.) from different fields of studies.

<u>Dimensions</u> - a scientific information search engine.

Open access resources are marked by "Open Access".

BASE - scientific information search engine.

Open access resources are marked by "Open Access".

<u>Core (Connecting Repositories)</u> - the world's most voluminous search engines

which provides an open access to scientific documents from repositories and to a collection of journals.

<u>WorldWideScience</u> - a global science gateway comprised of national and international scientific databases and portals.







The search of standards

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- □ <u>Lithuanian Standards Board (LST) Standards Catalogue</u> is accessed through KTU Virtual library or Library Catalogue.
- □ the International Organization for Standardization (ISO) http://www.iso.org
- ☐ European technical standardization system:
 - ✓ The European Committee for Electrotechnical Standardization (CENELEC) https://www.cencenelec.eu/about-cenelec/
 - ✓ The European Committee for Standardization (CEN) https://www.cencenelec.eu/about-cen/
 - ✓ The European Telecommunications Standards Institute (ETSI) http://www.etsi.org





Information search and artificial intelligence

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1

There are various programs which use AI to look for articles, e.g.: Semantic Scholar, Elicit, Litmaps, research Rabbit, Keenious, etc., yet they are not licensed by Kaunas University of Technology and their use is your own responsibility.

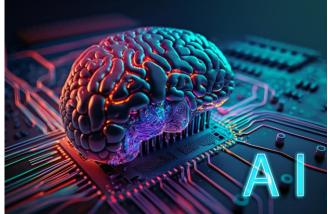
Advice

If you know something about the topic you are researching and you can evaluate the content generated by AI, you can, for example:

- ✓ to ask AI to offer you keywords which are related to your topic;
- ✓ to get new views about the topic.

Attention! Don't forget to evaluate the resources!

Even though with the help of AI you found the resource which really exists (webpage, article, etc.), it can be unsuitable to use.



Artificial intelligence tools

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Several text tools

























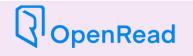
RESEARCH

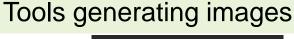
ASSISTANT

















Video tools





Al tools for music







Tools offered by university

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Scopus AI – is a search tool that utilizes generative AI (GenAI) technology to assist users in retrieving and summarizing information. [1]

Microsoft Copilot – is an Al-powered tool that helps with your work tasks by offering contextual assistance, automating routine tasks, and analyzing data.

Research Assistant - The Primo Research Assistant is a tool powered by Generative Artificial Intelligence, which allows to explore academic content by asking questions in natural language. The tool uses most of the content found in KTU virtual library to identify five documents that can help answer your question.





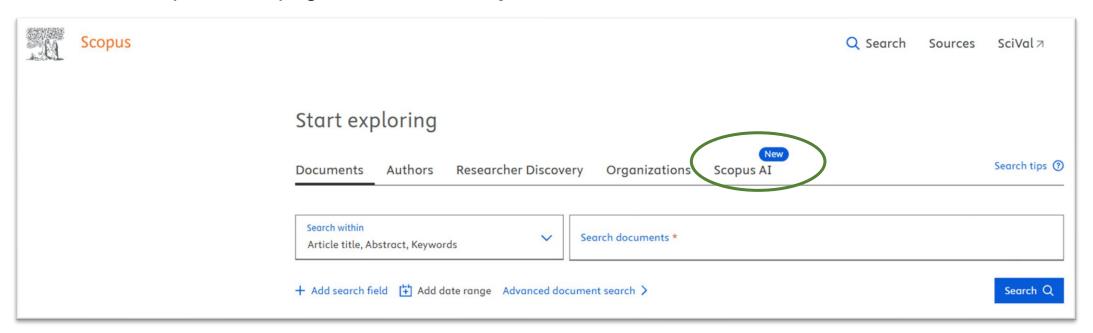


Scopus AI: How does it works?

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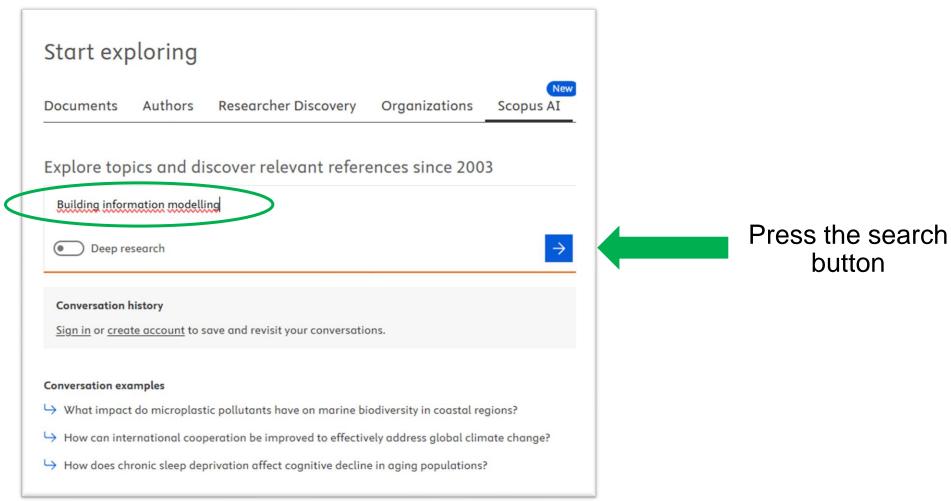
Scopus is one of the largest abstract and citation database of peer-reviewed literature delivering a comprehensive overview of the world's research output. Available in the KTU virtual library by selecting Database Search or on the library page E-resources — Databases and their descriptions.

1. From the Scopus homepage, select the **Scopus AI** tab



Scopus AI: Queries

2. Type a query into Scopus AI in the words, format and language of your choice: Scopus AI supports natural language queries.



Scopus AI: Summary

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On the Summary page, you can:

- ✓ view the abstracts, references, and main documents;
- ✓ view an Expanded summary;
- ✓ select "Export all references" and upload the specified documents to, for example, Mendeley or RefWorks.

Building information modelling

Show Copilot steps 🗸



Building Information Modelling (BIM)

Building Information Modelling (BIM) is a transformative technology in the Architecture, Engineering, and Construction (AEC) industries, offering a comprehensive approach to managing building projects throughout their lifecycle. Here are the key aspects and benefits of BIM:

Core Characteristics of BIM

- Visualization: BIM provides a digital representation of every aspect of a building, allowing stakeholders to visualize the project in a simulated environment 1 2.
- Coordination: It enhances collaboration among project stakeholders by creating a centralized data model, ensuring consistency and continuity of information 3 4.
- Simulation: BIM allows for the simulation of various scenarios, including design, construction
 and operational phases, to identify potential issues early 1 2.
- Optimization: The technology supports optimaintenance, leading to better decision-ma

Resources found by the AI tool

Summary with Scopus references

References

Reference 1

Building information modeling (BIM) and analysis of more traditional CAD

Lil.

Reference 2

Implementation of laser scanning and BIM technology in damaged buildings reconstruction

Alekhin V.N., Abdullah H.

Reference

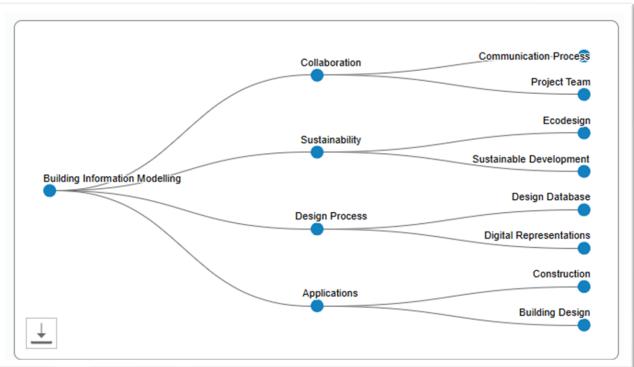
Building Information Modelling

Adenoiu O.

Scopus Concept Map

The **Concept map** is designed to help you get a more complete picture of your theme and its relationship to other research areas.

Insights at a glance -O- Emerging Themes Concept Map Se Topic Experts Go deeper



- → What are the key components of Building Information Modelling?
- → How does Building Information Modelling improve collaboration in construction projects?
- → What role does Building Information Modelling play in sustainable building design?

☐ Scopus Al generates three Go deeper questions for each query that is designed to help you drill down and broaden your understanding.

Microsoft Copilot capabilities

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- ✓ Document creation: Microsoft 365 Copilot helps you draft reports, presentations, and emails by generating content and offering editing suggestions;
- ✓ Data analysis: In Excel, Microsoft 365 Copilot can help you analyze data trends, generate formulas, and create visualizations;
- ✓ Project management: With Microsoft 365 Copilot in Microsoft Teams, it's easier to track tasks and schedules to keep projects on course;
- ✓ Communication: In Outlook, Microsoft 365 Copilot can help summarize key action items from your inbox by topic or sender.

Type in the prompt

Hi there. What should we dive into today?

information literacy teaching topics for first-year students

Quick response

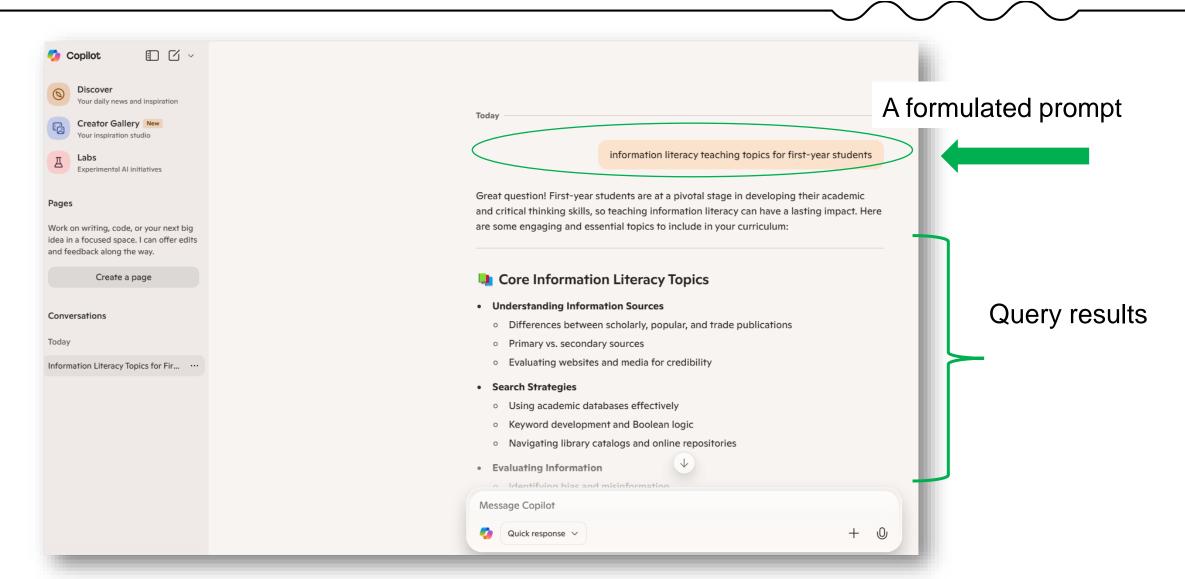
Quick response

Write a first draft | Improve write | Improve w

Available online: copilot.microsoft.com

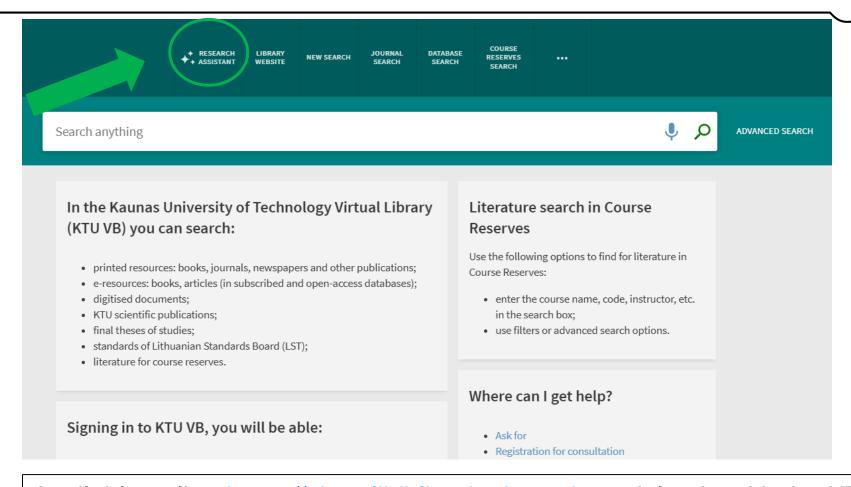
Microsoft Copilot

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Research Assistant (1)

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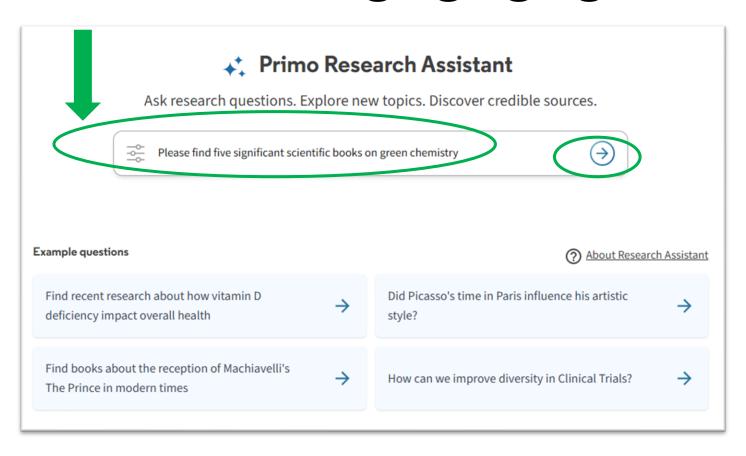


Available online https://virtualibiblioteka.ktu.edu and log in with the KTU single username and password.

Research Assistant (2)

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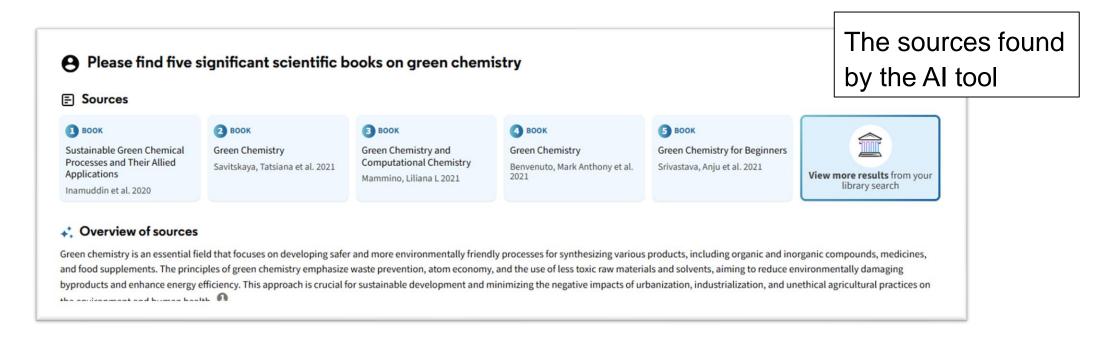
- ✓ Your question is converted into a query that the search engine understands with the help of a Large Language Model and identifies the most relevant documents in the index;
- ✓ It ranks them according to how well they can answer the question;
- creates an answer from the top 5 sources.



☐ If you ask a question in another language than English, the Assistant will search in both, your local language and English, and write the answer in the language of your question.

Research Assistant (3)

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- ✓ There may be more than one possible answer and different resources that are relevant. If you are not satisfied with your answers, use the "Try again" button.
- ✓ Keep in mind that AI-generated answers should be verified for correctness, as they may not always be accurate or up-to-date.
- ✓ The Primo Research Assistant is not a replacement for human expertise.

How to form an effective prompt?

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- ✓ Ask in a concise, clear and concrete manner the more precisely you ask the question, the better the result will be.
- ✓ Formulate a clear objective explain to the chatbot what you want to come up with or achieve.
- ✓ Give the chatbot a role help it understand from what perspective it should analyze the situation.
- ✓ Define the style and audience of the answer, e.g.: "Explain in a way that even a sixth grader can understand".
- ✓ Clarify restrictions and format, e.g.: "The answer must consist of 5 steps".
- ✓ Provide examples of a good response, e.g.: "Use examples from these sources..... [2]

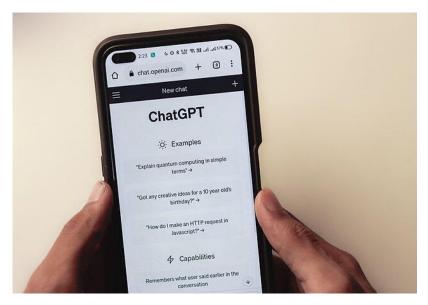


Fig. 1. Why My ChatGPT Account is Blocked? How To Fix It? [3]

Top 5 things to be aware of (1)

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1. "Be wary of false citations, even if the sources sound legitimate or you are provided with quotes from the article. Large Language Models (LLMs) like Chat GPT can often "hallucinate" or invent sources that sound convincingly real. It can make up articles from established publications and even court cases with quotes from imaginary opinions" [4].

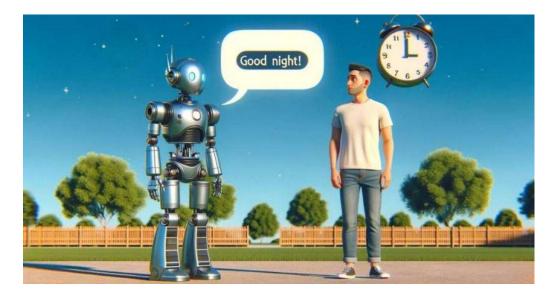


Fig. 2. What are Al hallucinations? [5]

Top 5 things to be aware of (2)

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Fig. 3. Friendly robot reading a book [6]

- 2. "Reading summaries is not a replacement for critically engaging with the text. Think of Al software that provides summaries of text as your first scan of a reading; it can help you get a general sense of the reading, but you may miss out on a lot of the nuance and subtle features of the text that can be essential for using it later in your own writing,..
- 3. "Be aware of the possibility of bias in the information you are presented. Sometimes GDI provides responses that take data out of context or reinforce harmful stereotypes. Though the responses provided by GDI may give the appearance of a complex, reflective, and deeply reasoned process, remember, current platforms are heavily susceptible to the quality of prompts that are entered and lack of moral understanding of the information they provide. Having a critical approach to the information you are presented is just as necessary as if you were engaging with other resources for your research" [4].

Top 5 things to be aware of (4)

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4. "Don't let generative Al do your work for you. Relying on generative Al to substitute the work needed to develop a skill or practice is not only a detriment to your own learning experience, but it offloads, as Marc Watkins notes, "the entire moral, ethical, and responsible thinking we expect from a human being,... 5. "While generative Al can help you work through various stages of the research process, remember you are ultimately responsible for knowing what is needed at each stage of your research and for the information you submit for evaluation,... [4]



Fig. 4. Growing Concern Over Students Using AI to Cheat on Homework [7]

Help

▲ Final Degree Projects

Final Degree Projects: similarity check in the Turnitin system and uploading to eLABa repository

Slides "Final Degree Projects: How to do Check Similarity in the Turnitin System and Upload it to eLABa repository" Library training

Training schedule / registration

Training sessions, learning materials / Video

Library trainings in Moodle

Registration

Registration for Consultation

Register for Guided tours

Work room reservations

Resources

Subscribed databases

Free trial databases

KTU Study Modules Literature

Lithuanian Academic Electronic Library eLABa

KTU research journals

Information for users using subscription databases

Access to the subscribed databases from home

What is allowed / not allowed in databases

■ Useful

Reference management tools

Software installed on library computers

Newly received books

References

- 1. ELSEVIER. Scopus LibGuide: Scopus AI. Available from: https://elsevier.libguides.com/Scopus/ScopusAI
- 2. LRT LT. Kaip teisingai formuoti užklausą "ChatGPT", kad gautumėte naudingą atsakymą? [How to formulate prompt correctly on ChatGPT in order to get a useful answer?]. Available from: https://www.lrt.lt/naujienos/mokslas-ir-it/11/2321809/kaip-teisingai-formuoti-uzklausa-chatgpt-kad-gautumete-naudinga-atsakyma [viewed 2025-07-14].
- 3. TECHNOTIFICATION. Why My ChatGPT Account is Blocked? How To Fix It?. Available from: https://www.technotification.com/2023/06/why-my-chatgpt-account-is-blocked-how-to-fix-it.html [viewed 2025-07-14].
- 4. WOLFSON COLLEGE. *Study Skills*. Available from: https://libguides.cam.ac.uk/wolfsoncollege/academic-ai [viewed 2025-07-24].
- 5. AISERA. What are AI hallucinations?. Available from: https://aisera.com/blog/ai-hallucination/[viewed 2025-07-24].
- 6. FOTOR. Home page. Available from: https://www.fotor.com/images/create [viewed 2025-07-24].
- 7. LHS TODAY. *Growing Concern Over Students Using AI to Cheat on Homework.* Available from: https://lhstoday.org/39127/news/growing-concern-over-students-using-ai-to-cheat-on-homework/ [viewed 2025-07-24].



How to find resources for engineering disciplines and physical sciences

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