



TERRA ENERGY



A platform by Terra Energy

# THE ULTIMATE RESEARCH MASTERCLASS

Instructor:

**Dr. Mohamed Alhaj**

*Expert and Award-winning Research*

*Consultant – Managing  
Director of Terra Energy*



# WHAT IS THE UTLIMATE RESEARCH MASTERCLASS?

The “Ultimate Research MasterClass” is a unique and transformative training program designed to upskill university students and young researchers and prepare them for an academic career in renewable energy and sustainability disciplines.

This program merges between theory, applied knowledge, hard skills, and an interactive learning approach to help students master the concepts of research and develop an academic excellence mindset in a short period of time.



## — THE — UTLIMATE RESEARCH MASTERCLASS

# GET TO KNOW THE MASTERCLASS INSTRUCTOR



- **Mohamed Alhaj**; Expert Research Consultant | Sustainable Energy Engineer | Peer-reviewer | Journal founder and associate editor | Public Speaker | Publisher

- **Education:**

- Ph.D. in Sustainable Energy with distinction, at age 28, from Hamad Bin Khalifa University, Qatar (2019)

- MSc. in Energy Technology from The National University of Malaysia, Malaysia (2014)

- BEng. Honors in the First Class in Mechatronic Engineering from The University of Nottingham, Malaysia (2012)

- **Interests:** renewable energy; solar PV, concentrated solar energy, systems modelling, techno-economic analysis, life cycle assessment, desalination, renewable energy finance, renewable energy education, energy policy





# GET TO KNOW THE MASTERCLASS INSTRUCTOR

- Dr. Mohamed Alhaj has published several journal articles in top journals in sustainability, renewable energy, and environmental sciences (including the U.K.'s prestigious **Institute of Physics (IOP) *Environmental Research Letters***. IOP has published for over 100 Noble laureates). He also presented in numerous conferences in Qatar, the U.S, and Singapore.

IOP Publishing

**More than 100**  
Nobel laureates have  
published with us

Read selected papers from these laureates



# GET TO KNOW THE MASTERCLASS INSTRUCTOR

## Peer-reviewed journal articles

1. **Alhaj, M.,** Tahir, F., Al-Ghamdi, S.G., (2022). Life-cycle environmental assessment of solar-driven Multi-Effect Desalination (MED) plant. *Desalination* 524, 1154-51.
2. Anour Dafaalla, Mohammed Khalil Saeed, Suad Badri, **Alhaj M.,** (2021). Sustainable development and the role of African scientific research centres. *African Journal of Engineering & Technology*. Vol. 1(1):1-3.
3. **Alhaj M,** Al-Ghamdi SG. (2019). Why is powering thermal desalination with concentrated solar power expensive? assessing economic feasibility and market commercialization barriers. *Solar Energy*.
4. **Alhaj M,** Al-Ghamdi SG. (2019). Integrating concentrated solar power with seawater desalination technologies: a multi-regional environmental assessment. *Environmental Research Letters* 14 074014. 2019.
5. Manan M, **Alhaj M,** Mabrouk A, Al-Ghamdi SG.(2019). Examining the life-cycle environmental impacts of desalination: A case study in the State of Qatar. *Desalination* 2019;452:238–46.
6. **Alhaj M,** Al-Ghamdi SG.(2018). Reducing electric energy consumption in linear Fresnel collector solar fields coupled to thermal desalination plants by optimal mirror defocusing. *Heliyon* 2018;4:e00813. Al
7. **Alhaj M,** Mabrouk A, Al-Ghamdi SG.(2018). Energy efficient multi-effect distillation powered by a solar linear Fresnel collector. *Energy Convers. Manage* 2018;171:576–86.
8. **Alhaj M,** Hassan A, Darwish M, Al-Ghamdi SG.(2017). A techno-economic review of solar-driven multi-effect distillation. *Desal Wat Treat* 2017;90:86–98.
9. **Alhaj M,** Mohammed S, Darwish M, Hassan A, Al-Ghamdi SG.(2017). A review of Qatar's water resources, consumption and virtual water trade. *Desal Wat Treat* 2017;70:70–85.

# GET TO KNOW THE MASTERCLASS INSTRUCTOR

## Selected conferences, seminars, and media appearances:

1. Keynote Speaker at the Sustainable Pathways to the Clean Energy Transition Conference. December 2022, Sudan. Organized by the Sudan University of Science & Technology, under the patronage of the Sudan Ministry of Higher Education & Scientific Research. Khartoum, Sudan. Link [here](#).
2. Featured by PowerforAll – Youth Leaders in SDG7, August 2022. Story available [here](#).
3. Featured by RES4Africa Foundation – RES4Youth series, May 2022. Story available [here](#).
4. Invited Moderator, by the Ruckerfeller Foundation to moderate a panel discussion on "Voluntary Carbon Markets in Africa" - hosted by the Global Energy Alliance for People and Planet, Africa Climate Week, August 2022. More information [here](#).
5. Online Seminar: **Mohamed Alhaj (2021)**. Recommendations for advancing the solar energy sector in Sudan. Azaim Al-Azhari University workshop on "Energy & Sustainable Development" September 2021.
6. **Mohamed Alhaj** and, Sami Al-Ghamdi (2019). Technical and Environmental Perspectives on Solar-Driven Seawater Desalination: A Case Study of Multi-Effect Distillation. World Environ. Water Resour. Congr. 2019, Proceedings. doi:doi:10.1061/9780784482346.045
7. Conference Participation: Delegate at the **Young Water Leaders Summit 2018**. I was selected by the Singapore National Water Agency to participate in this summit which is part of the Singapore International Water Week 2018 (one of the largest events for the global water industry).
8. Conference Presentation: The International Symposium for Sustainable Systems and Technologies (ISSST 2018) Buffalo NY U.S.A: "Life Cycle Environmental Impacts of Solar-Driven Desalination".

# GET TO KNOW THE MASTERCLASS INSTRUCTOR

## Academic & research experience

- Teaching Assistant for Research Methods & Ethics core module at College of Science & Engineering, Hamad Bin Khalifa University, Fall 2018
- Editorial board member in Environmental Network Journal, published by Global Waste Cleaning Network, U.K.
- Editorial board member in UCL Open Environment journal, published by University College London, U.K.
- Founder & Associate Editor in African Journal of Engineering & Technology, published by the Sudanese Researchers Foundation
- Verified reviewer for several high impact journals in renewable energy and sustainability such as The International Journal of Life Cycle Assessment, Journal of Cleaner Production, Energy Conversion and Management, and Environmental Research Letters
- Recipient of the CITI Program Certificate for Social and Behavioral Research, as per requirements of Ministry of Public Health, Qatar
- Worked on applying for 4 research grants from the Qatar National Research Fund (National Priorities Research Program), out of which two were awarded a total of \$1.2 million.

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## Professional experience

- Sept. 2022 - Present: Founder & Managing Director of Terra Energy  
(<https://terraenergi.co/>).

Terra Energy is my consulting firm specializing in market research, business development, and training in the sustainable energy sector. We work with intl. organizations, DFIs, philanthropies, government, and the private sector to develop innovative programs and initiatives that support Africa's energy transition.

Areas of expertise: market research studies in renewables and e-mobility, intl. business development and market entry strategy, training programs, research and publications, and youth programs.

- August 2020-September 2021: Publishing Director at the Sudanese Researchers Foundation, (the largest Sudanese NGO in scientific research & development) where I developed the Foundation's first-ever scientific peer-reviewed journal; African Journal of Engineering & Technology; [https://www.scienceopen.com/collection/SRF\\_AJET](https://www.scienceopen.com/collection/SRF_AJET)

<https://terraenergi.co/teams/dr-mohamed-alhaj/>



# GET TO KNOW THE MASTERCLASS INSTRUCTOR

See my **FREE** talks, seminars, and workshops on renewable energy, scientific research, and academic excellence which received thousands of views:

1. Featured by TRT Haber – Turkish National Television & Radio Network, on December 2022, in a report on clean energy in Africa. Link available [here](#).
2. Invited Moderator, by RES4Africa Foundation, to speak in a panel discussion on "**Youth Empowerment for Driving African Energy Transition**" at **COP27, November 2022, Egypt**. Link [here](#).
3. Webinar on “Investment opportunities in the solar energy sector in Sudan” 2021, hosted by Solarabic and Jinko Solar - <https://www.youtube.com/watch?v=GsdycosPwbc>
4. Webinar on “My experience in scientific publishing”, 2020, with the Sudanese Researchers Foundation - <https://www.youtube.com/watch?v=ldWfUPz-WrM>
5. Webinar on “My experience studying at Hamad Bin Khalifa University, Qatar”, 2020, with the Sudanese Researchers Foundation - <https://www.youtube.com/watch?v=RxlP7DEt6uY>
6. Talk on “5 steps to be a great researcher”, 2019, presented at Qatar University Annual Research Forum Tad Talk series - [https://www.youtube.com/watch?v=irUqGpl4Cco&feature=emb\\_title](https://www.youtube.com/watch?v=irUqGpl4Cco&feature=emb_title)
7. Webinar on “5 years of renewable energy research”, 2018, with the Sudanese Researchers Foundation - [https://www.youtube.com/watch?v=ZrO7CmBic14&feature=emb\\_title](https://www.youtube.com/watch?v=ZrO7CmBic14&feature=emb_title)

[See also my student guide for renewable energy at the Clean Energy 4 Africa platform](#)

# GET TO KNOW THE MASTERCLASS INSTRUCTOR

## Talks & Awards



**Qatar Sustainability Award 2017**

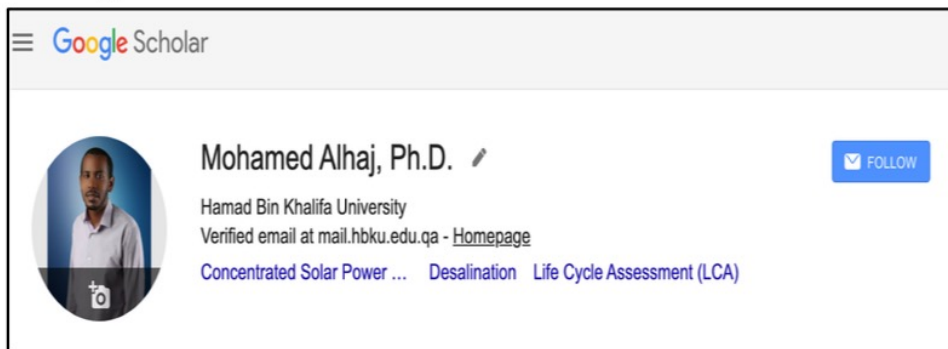


**Qatar University Tad Talks, 2019**

**Best Green Sustainable Initiative,  
Qatar National Program for  
Conservation & Energy Efficiency  
"TARSHEED", 2018**

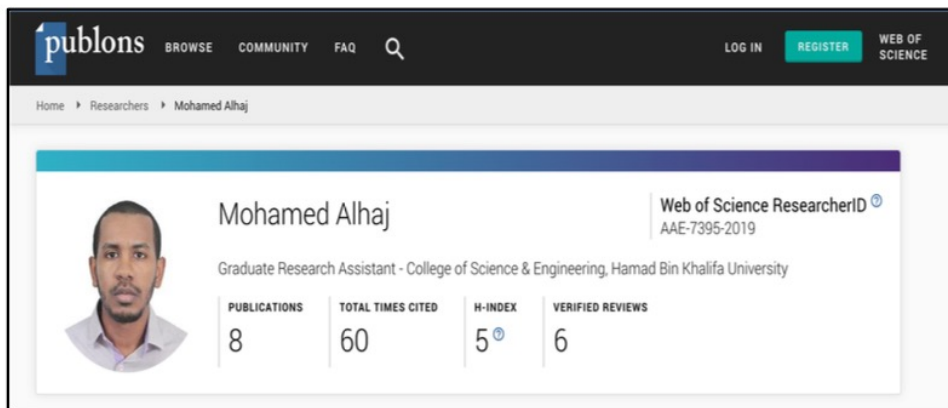
# GET TO KNOW THE MASTERCLASS INSTRUCTOR

## Google Scholar



Google Scholar profile for Mohamed Alhaj, Ph.D. The profile includes a profile picture, a 'FOLLOW' button, and text identifying him as a Hamad Bin Khalifa University researcher with a verified email. His research interests are listed as Concentrated Solar Power, Desalination, and Life Cycle Assessment (LCA).

## Publons

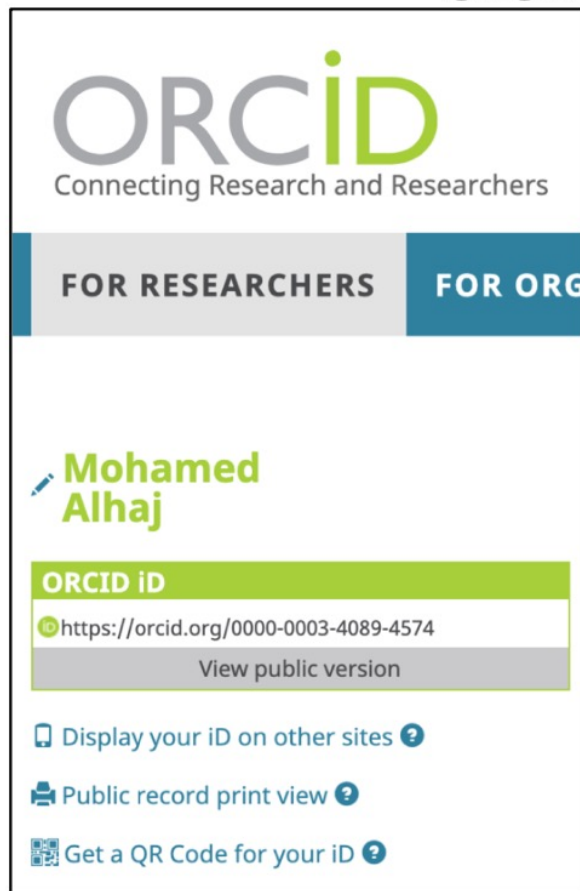


Publons profile for Mohamed Alhaj. The profile shows a profile picture and a table of research metrics:

PUBLICATIONS	TOTAL TIMES CITED	H-INDEX	VERIFIED REVIEWS
8	60	5	6

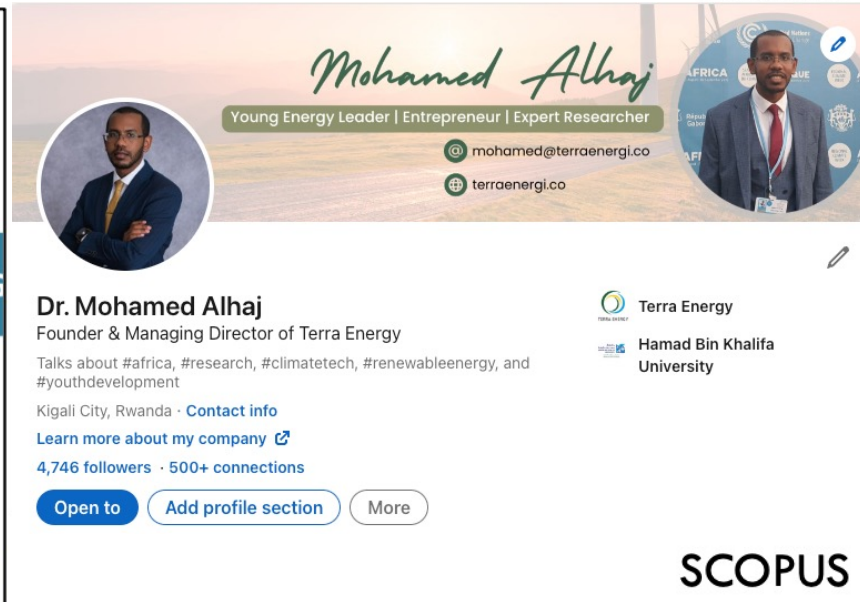
Additional information includes his role as Graduate Research Assistant at Hamad Bin Khalifa University and his Web of Science ResearcherID (AAE-7395-2019).

## ORCID



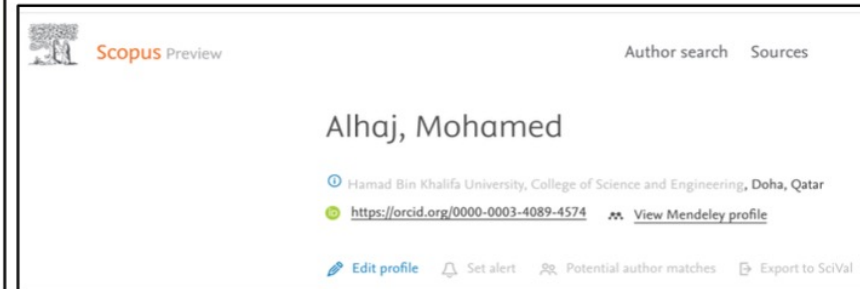
ORCID profile for Mohamed Alhaj. The profile features the ORCID logo and tagline 'Connecting Research and Researchers'. It includes a green banner with the name 'Mohamed Alhaj' and the ORCID iD: <https://orcid.org/0000-0003-4089-4574>. Below this, there are options to 'View public version', 'Display your iD on other sites', 'Public record print view', and 'Get a QR Code for your iD'.

## LinkedIn



LinkedIn profile for Dr. Mohamed Alhaj. The profile includes a profile picture, a banner with the name 'Mohamed Alhaj' and title 'Young Energy Leader | Entrepreneur | Expert Researcher'. It lists his email (mohamed@terraenergi.co) and website (terraenergi.co). The profile identifies him as the Founder & Managing Director of Terra Energy and lists his affiliation with Hamad Bin Khalifa University. It also shows he has 4,746 followers and 500+ connections.

## SCOPUS



Scopus profile for Alhaj, Mohamed. The profile includes a Scopus Preview logo and the name 'Alhaj, Mohamed'. It lists his affiliation as Hamad Bin Khalifa University, College of Science and Engineering, Doha, Qatar, and provides the ORCID iD: <https://orcid.org/0000-0003-4089-4574>. There are links to 'View Mendeley profile', 'Edit profile', 'Set alert', 'Potential author matches', and 'Export to SciVal'.

# 5 REASONS TO TAKE THIS MASTERCLASS

Summarizes 7+ years of research experience (including failures!)

Focuses **on tools and practical skills with real exercises from day 1!**

Covers **all you need to become a competent researcher** from defining the research problem to publishing in top journals and advancing your career as a scientist

**Develop a clear action plan** for advancing your career and landing your dream job!

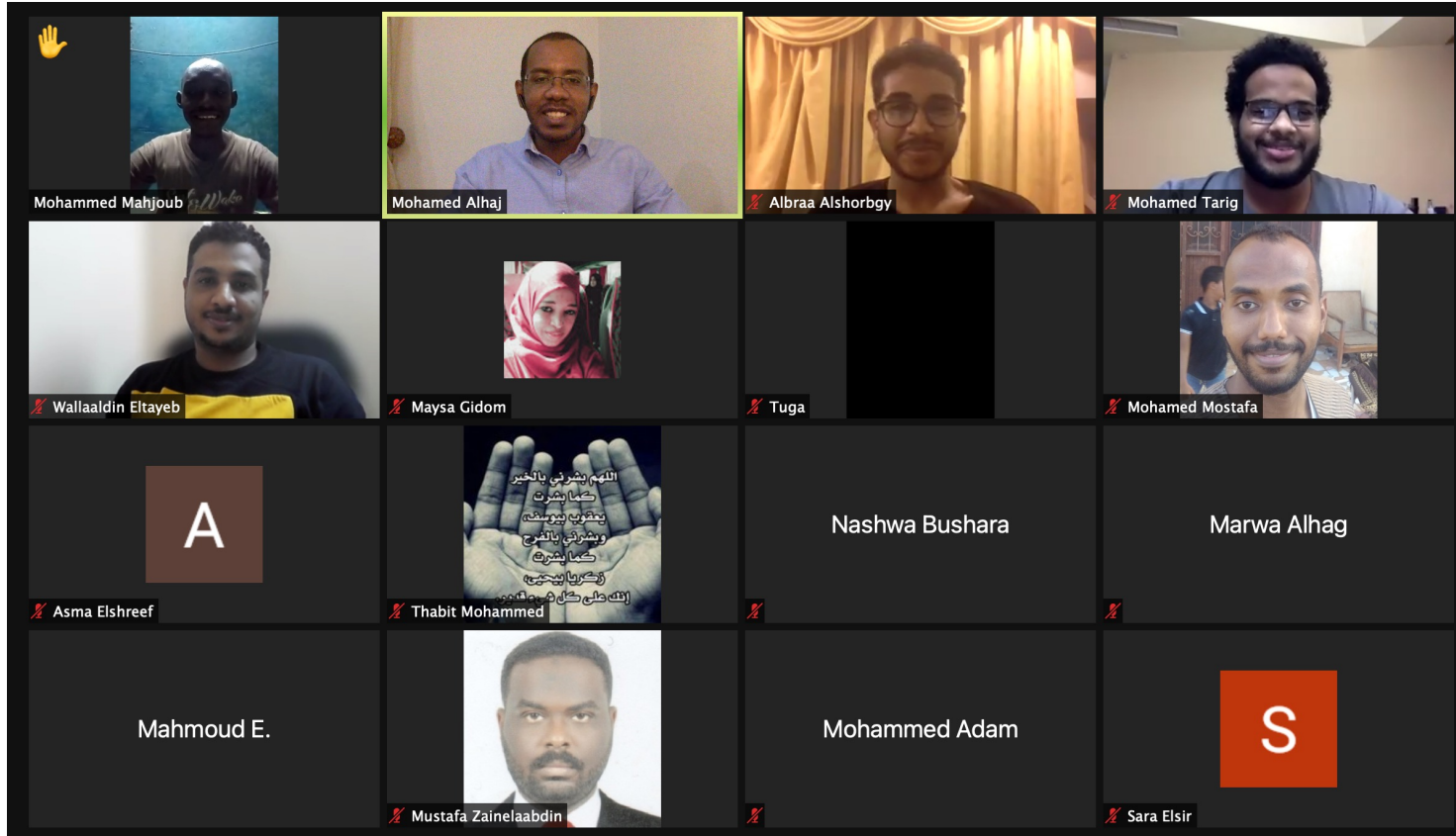
Covers **essential transferable skills** that are applicable in multiple industries





# TESTIMONIALS

*This course was offered as a pilot to four batches of students in 2021 and 2022*



- 30 participants
- Sudan, Qatar, USA, Saudi Arabia, India, Turkey, UAE, Sri Lanka, Kenya, & Norway
- **Participants background:** Bachelors students, Masters students, PhD candidates, professionals, engineers, doctors, and even university faculty members
- **Disciplines:** medicine, dentistry, engineering, business, economics, statistics, architecture, and applied sciences



# PARTICIPANTS FEEDBACK

**100%** said the masterclass helped them identify and search for reliable literature sources

**100%** said the career development lecture was very insightful and helpful for their career planning

**95%** said the masterclass helped them learn how to conduct a good literature review

**91%** said they will most certainly recommend this masterclass to their peers

# TESTIMONIALS

”Outstanding program! I gained so much knowledge and skills! I highly recommend this program to anyone from any field.” – *Thabit Mohamed, Cardiology resident, PhD candidate, Saudi Arabia*

” It was so informative course, give you a giant step in your research journey. Showing the right way of the scientific research method, and clarify the common mistakes people do. Highly recommend for all researcher, brilliant step to start” – *Albarra Alshorbgy, Electrical engineer, MSc candidate, Indian Institute of Technology, India*

# TESTIMONIALS

”I have learnt new updated topics from your excellent training program— *Dr. Nashwa Bushara, Assistant professor, Faculty of Dentistry, Hail University, Saudi Arabia*

” The masterclass has been a truly invaluable learning experience for me. This course helped me to understand where my strengths and weaker aspects lie, and what areas I need to pay attention to. I learned so many things about writing and publishing articles, and even how I can get a job in an academic or research field Thanks again to Dr Mohamed Elhaj. I feel extremely accomplished!” – *Maysa Gidom, Electrical engineer, MSc candidate, Sakarya Üniversitesi, Turkey*

# TESTIMONIALS

"It was a very interesting and valuable experience. Excellent content and assignments that built on my knowledge. I gained a lot of practical strategies that will be beneficial to me during my research" – *Tuga Yousif, Software engineer, MSc graduate, Neelain University, Sudan*

" The content is excellent and easily understandable even if you have no idea about scientific research " – *Asmaa Elshreef, Teaching Assistant, National Ribat University, Sudan*

"It was a valuable course with its implications reaching far out into the realms of research. The instructor was confident which reflects his experience and his presentation method was interesting" – *Maram Ali, Lecturer, PhD candidate, and journal editorial manager, Neelain University, Sudan*

# TESTIMONIALS

” It's the first time for me to attend a course with intensive, new, and helpful information. It added great value to me. I was too misled and confused about the whole research before taking this course, but now I know what I should do and how to do it well. You did the course sincerely. Thank you too much” – *Ayat Alryah, School of Math, University of Khartoum, Sudan*

“Being a lawyer the core activity undertaken is research. Research is very bulk and tiresome. Being taught how to simplify a research task helps reduce the workload, creates ease in finishing the task and makes it enjoyable. By taking the Ultimate Research Masterclass I have learnt a lot that I will input in my research tasks especially in my field of interest, renewable energy. I am glad I took this class and would recommend it to my peers as the lessons and hacks learnt can be applied in any field.” - *Esther Mukami Githinji, Advocate of the High Court of Kenya*



# WHO IS THIS MASTERCLASS FOR?

- University students: final year undergraduates, MSc, and Ph.D. students
- Young university lecturers
- Working professionals interested in post-graduate studies
- Course content is appropriate for engineering, business and economics, and applied sciences
- Examples discussed in the program are tailored to sustainable energy, environment, and sustainability-related fields



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**UTLIMATE**  
RESEARCH MASTERCLASS

# IN THIS MASTERCLASS YOU WILL LEARN:

## Curriculum

Lecture 1: **Introduction to scientific research**

Lecture 2: **Research ethics**

Lecture 3: **How to conduct your literature review**

Lecture 4: **Research methods**

Lecture 5: **Scientific writing and how to get published!**

Lecture 6: **Research presentation skills**

Lecture 7: **Research career development**



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**UTLIMATE**  
RESEARCH MASTERCLASS

# LECTURE 1: INTRODUCTION TO SCIENTIFIC RESEARCH

- What is scientific research?
- Types of research
- How to develop the researcher mindset
- Basic definition: ethics, research methodology, and novelty
- Job prospects of researchers
- How to choose your research area?
- **Assignments:** reading material



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**UTLIMATE**  
RESEARCH MASTERCLASS

# LECTURE 2: RESEARCH ETHICS

- Overview of ethics and why we need them
- Publishing etiquettes
- Copyrights, responsible sharing ethics, and image permission and reuse ethics
- Scientific misconduct and how to avoid it
- Ethical approvals
- Ethics of research involving human subjects and surveys
- **Assignments:** reading material + exercise on copyrights



# LECTURE 3: HOW TO CONDUCT YOUR LITERATURE REVIEW

- Databases and tools for finding reliable literature
- Journal classification
- How to identify “fake” or predatory journals
- What is open access publishing?
- Mastering references management software
- How to read and synthesis scientific papers
- Identifying your research questions
- Writing review papers
- **Assignments:** reading material + references management software + mini review paper





# LECTURE 4: RESEARCH METHODS

- Understanding research methods
- Quantitative and qualitative research methods
- Experimental design and lab safety
- Working with computer modelling tools
- Designing professional surveys
- Focus groups, interview, and advanced research methods
- Overview of statistical analysis and where you need it
- Data management protocols (privacy, accuracy, acquisition procedures, timeliness, and consistency)
- How to select the right method for your research project
- How to present results, figures, and graphs in a professional manner
- Interpreting results and deriving conclusions



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# LECTURE 5: SCIENTIFIC WRITING AND HOW TO GET PUBLISHED

- The philosophy behind scientific publishing
- Preparing to publish
- The 11 steps framework to prepare and submit your manuscript
- Writing tips and extensive examples and templates
- Working with reviewer comments
- Processes after paper acceptance
- Preparing conference papers
- Preparing university theses and dissertations



# LECTURE 6: RESEARCH PRESENTATION SKILLS

- Why effective presentation skills are a must!
- How to prepare and deliver stunning presentations
- Advanced exercises on MS PowerPoint (formatting slides, configuring the master slide, numbering, comments, animations, transitions etc)
- Preparing your university graduation presentation
- Posters preparation and templates



# LECTURE 7: RESEARCH CAREER DEVELOPMENT

- What is career development?
- How to excel in graduate school: applying to universities, applying for scholarships, writing your personal statements (and templates to help you get started), how to choose your adviser, attending conferences, and work-life balance
- How to prepare a research proposal
- Build your online researcher profile and develop your research website
- How to develop your personal brand as a researcher
- Applying for research jobs (including a full application package sample), preparing your CV and cover letter, and expanding your network
- Essential professional skills: effective communication, data backup skills, networking skills, and cybersecurity
- Advanced career development skills: peer review, applying for research grants, and applying for editorial board positions



# LEARNING OUTCOMES

**By the end of this masterclass, students will:**

- ✓ Understand scientific research principles
- ✓ Know how to identify their research area and narrow it to a suitable scope
- ✓ Comprehend research ethics and how to apply them
- ✓ Be able to identify reliable literature sources in any field and their classification
- ✓ Understand the process for conducting a good literature review
- ✓ Be able to identify the appropriate methods for their research project
- ✓ Understand how to analyze results, present them well, and derive insights
- ✓ Understand how to write and publish scientific papers
- ✓ Be able to prepare and deliver stunning presentations
- ✓ Learn how to develop professionally and improve their career prospects





# MASTERCLASS DELIVERY

- 7 lectures; approx. 2.5 hours each
- Duration: four weeks taught remotely via Zoom (*and can be delivered in one week as an in-person workshop*)
- Lectures can be delivered in-person in at your institution or via Zoom
- Participants will receive close guidance and mentorship from the instructor
- Participants will receive a unique certificate from Terra Energy (which can be added to their LinkedIn profile)
- Participants will also receive:
  - ✓ **Lifetime access to lecture recordings, presentation files, exclusive MS Word and MS PowerPoint template files**



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RESEARCH MASTERCLASS



Contact us to request a quotation:

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Norrskén House Kigali, Rwanda

Instructor:

**Dr. Mohamed Alhaj**

*Managing Director*

*of Terra Energy*

