

**Seminar Title:** " Integrating Artificial Intelligence (AI) into Scientific Research on SME Management"

**Duration:** 18 hours (3 days)

**Dates:**

- January 8-9 all day and January 10 in the morning, 2025.

**Course Objectives:**

- The purpose of this course is to provide a practical guide for conducting a comprehensive systematic literature review (SLR), particularly on topics related to SMEs and CSR
- Construction of conceptual frameworks, incorporating AI-based tools and resources for presentation.
- Guide participants through all stages of the review preparation process, from scope analysis to the final report writing. Various AI tools that are available and relevant at the time of the course will be utilized, with a focus on the most prominent and impactful ones, in line with current technological advancements
- Draft of a scientific study or research paper

**Course Description:** This course is designed for master's students and executive participants interested in applying AI tools and resources to the research process. Throughout the seminar, participants will explore innovative methods for conducting research, with a specific focus on SMEs. The course will combine theoretical concepts with interactive practices, case studies, and group projects, ensuring a comprehensive and practical understanding of AI-driven research.

**Syllabus:**

**Day 1: Introduction to AI in the Scientific Research Process for SMEs**

**Objective:** Introduce students to the role of AI in enhancing research capabilities within Small and Medium-sized Enterprises (SMEs).

- **Morning:**
  - Welcome and seminar introduction.
  - Overview of AI in research (AI-driven tools, automation in literature review).
  - **Activity:** installation of VOSviewer software ( <https://www.vosviewer.com/> ) and SCOPUS database ( <https://www.scopus.com/> ). Note: If you are unable to access the SCOPUS database, don't worry. The professor will share some databases in CSV format for you.
  - Application of AI in SME research and other fields, considering challenges such as data limitations, resource constraints, and scalability issues. Tools: Overview of AI research tools (VOSviewer, SCOPUS, ChatGPT, Google Scholar, Consensus, etc.)

- **Activity:** perform some exercises identifying characteristics and figures of research on the topics of SMES, SLR, CSR and AI. the professor will provide the SCOPUS databases
- **Activity:** Group discussion on potential applications of AI in SME research, scientific studies, or other industries, focusing on improving efficiency, decision-making, and innovation.
- **Afternoon:**
  - Assignment: Each participant identifies 2-3 *Research Questions* that can benefit from AI.
  - Practical workshop: Using some AI tools. Basis VOSviewer + SCOPUS. Jenni.AI and Paperpal).
  - Literature Review on the topic
  - **Activity:** Hands-on session where students use IA tool to identify key literature related to their selected research questions.

## Day 2: Data Extraction, Synthesis, and Research Report Preparation

**Objective:** Teach data extraction and synthesis methods, using AI tools to automate and enhance this process.

- **Morning:**
  - Defining scoping analysis and its importance in framing research questions.
  - How to conduct systematic literature searches (keywords, inclusion/exclusion criteria).
  - Introduction to AI tools for literature identification (Paperpal, SciSpace, Elicit).
  - **Activity:** Hands-on session where students use Paperpal, SciSpace and Elicit to identify key literature related to their selected research questions, extract of information, AI detection.
- **Afternoon:**
  - Data extraction from selected studies (methods, challenges).
  - Using AI for synthesis and report generation
  - Tools: Jenni.ai, paperpal, ChatGPT, ChatDOC, etc.
  - **Assignment:** Submit a draft synthesis report that summarizes the key findings from the reviewed studies. In addition, prepare a draft of the research paper, including the Title, Abstract, Introduction, and References sections.

## Day 3: Research Presentation and Visual Communication

**Objective:** Develop participants ability to present their research findings using AI-based presentation tools.

- **Morning:**
  - Principles of effective research presentation (clarity, visual storytelling, audience engagement).
  - AI tools for creating dynamic presentations (Gamma and Fliki).

- Tools: Gamma and Fliki (for generating AI-enhanced research presentations and videos).
- **Activity:** Students work in groups to create a 7-minute presentation of their preliminary research findings using Gamma and Kliki
- **Assignment:** Submit the group presentation along with the Gamma-generated visual report.
- Summary of AI tools and future of the of Science Writing.
- Drafting and Peer Review of Scientific Research.
- Structure of a scientific article (introduction, methodology, results, discussion, conclusion).
- Discussion and feedback on presented projects.
- **Final Activity:** Students draft a first version of their article. Conduct peer reviews in class, using guidelines to provide constructive feedback.
- **Final Assignment:** Submit the final draft of their scientific article based on the research they've conducted throughout the course.

### Final Assignment: Scientific Article Draft

Objective: Students will submit a fully developed draft of a scientific article or research paper by the end of the course.

Requirements:

Must include a clear research question, comprehensive literature review, data analysis, and discussion of results.

Use at least 3 AI tools (from the course) to assist with different parts of the research and writing process.

Submission includes a reflection on how AI improved their research process.

Note: *Second-year master's students will prepare an additional draft of no more than 5 pages.*

### Guideline for grading

Appreciation	Excellent	Very satisfactory	Satisfactory	Average	Insufficient	Very insufficient
Equivalent	« Beyond expectations »	« Very good work »	« good work »	« Adequate but I expected more »	« I am disappointed »	« Not good enough »
Equivalence mark out of 20	18	16	13	10	7	4

### **Technical Requirements:**

- Laptop preferably with Windows system and Wi-Fi.

### **Teaching Method:**

The course will be conducted interactively, combining the instructor's expertise with the active participation of attendees through practical workshops and videos. Real scientific research that has employed this methodology will be explored, and various AI tools will be utilized. Additionally, participants will have access to online resources and will receive continuous feedback to ensure their progress.

**Conclusion:** This course, AI Integration in Scientific Research for SMEs, offers a comprehensive, hands-on approach for master's students and executive participants, equipping them with cutting-edge AI tools and methodologies to enhance their research processes. Over the span of 18 hours, participants will engage deeply with the systematic literature review process, develop their own research questions, and utilize AI tools to automate and improve data extraction, synthesis, and presentation.

By combining theoretical knowledge with practical applications, this course bridges the gap between traditional research methods and the opportunities presented by AI. Participants will not only learn to conduct rigorous research with a focus on SMEs but will also gain the skills to create AI-enhanced presentations and draft a full scientific article. The final deliverable, a draft research article, will reflect the knowledge and practical experience gained throughout the course, positioning participants to apply these techniques in both academic and business research settings.

Through continuous feedback, peer review, and interactive workshops, participants will leave the course with a solid foundation in AI-driven research and the ability to utilize these tools to improve the depth, accuracy, and efficiency of their investigations. As the integration of AI continues to transform the research landscape, participants will be well-prepared to contribute to and lead future scientific advancements, particularly in the context of SMEs.

Prepared by Mauro Rodriguez-Marin PhD.

[Mauro.rodriquez@tec.mx](mailto:Mauro.rodriquez@tec.mx)