

## **Critical literature review paper**

### **VLSI Design**

The goal of this assignment is to write a literature review paper (of approximately four pages using an IEEE standard template) on a topic in Microelectronics Radiation Effects or Reliability. This assignment will allow you to think critically and deeply about a topic of your choosing that may be related to your project.

#### **Format:**

IEEE templates are provided here: <https://template-selector.ieee.org/secure/templateSelector/publicationType>). Search for IEEE Transactions on Nuclear Science and use this 2-column formatted document as your primary formatting reference.

#### **Purpose:**

It is important to note that the purpose of this assignment is to review the current literature on a selected topic. You are expected to describe the significant trends in a chosen area, elaborate on several important solutions to past challenges, and identify the significant challenges to address. When describing the challenges that researchers and practitioners will face, you need to critically analyze the current theories, processes, and methodologies and identify promising directions that future research could take.

#### **Writing your Review Paper:**

Each paper also needs to include a minimum of three sections, including an Introduction, Research Problem Formulation (or something similar), and Conclusion/Summary sections, where you will analyze the topic of your review. Use the following list to guide writing this part of your paper.

##### **Suggested Outline:**

- Introduction: An overview of the major challenge(s) faced in this area of research and/or practice;
- Main Body (with section headings): A review of the approaches and studies used in the past to overcome these challenges. For each approach: discuss the problem(s) it addresses, methods used, theoretical foundation, the results of this approach, and any unresolved issues and study limitations.
- Summary: A summary of the status of the field;
- Future Challenges: A description of the challenges for future research.

#### **The Literature Reviewed:**

Your review should cite between 2-4 peer-reviewed articles. Every article you use needs to appear in the reference section. A paper cannot appear in the reference section if it is not explicitly cited in the main body of the paper. Remember that citations are not usually cited in the abstract.

## **Submitting your Paper**

Completed papers should be submitted in PDF format before the deadline, uploaded directly to the Canvas page.

## **Grading criteria**

1. Factual correctness, completeness of the answer, and accurate formatting and style of writing: 30%

All comments and statements in the papers must be factually sound, backed up by research and implementation results from reliable sources, and provide an adequate review of the domain under study. This criterion also includes clear explanations of ideas and analyses from the literature. Personal interpretations of definitions can be used, but only if proven through methodological research. Ungrounded definitions of well-defined concepts will lead to significant mark deduction. Most importantly, students must demonstrate an accurate and critical use of the research literature. Weaknesses observed in factual soundness have direct negative implications on synthesis/critical analysis and methodology criteria listed below.

2. Synthesis and critical analysis of the topic: 40%.

A synthesis of the topics discovered and learned from the literature is expected. Only short quotes of the definitions are acceptable. Long sections of someone else's analysis are not considered to indicate synthesis and critical discussion of the topics analyzed, as they do not demonstrate the knowledge and understanding of the material. The ability to find a relevant source is an essential auxiliary step toward one's synthesis of the knowledge learned from different sources, which is the primary objective of this course. Each paper needs to discuss the limitations of the phenomena under study, the relevance of the phenomena with respect to related work from the literature, a discussion of the alternatives to the proposed approach, and the reasons for selecting that approach. Students are also expected to conclude the synthesis of the various topics learned from the literature review, to show how these conclusions are innovative and have not been specified in the literature; and to prove that they are scientifically and/or methodologically valid.

3. Methodological explanation of the concepts: 30%

Students are expected to present explicit and sound justifications for the decisions to include certain concepts in the discussion, as otherwise the report will be methodologically unsound. A strong justification for the organization of the paper and a methodologically grounded explanation of the steps taken in the process of the literature review (e.g., what sources were used, why those sources were selected, and what selection criteria were followed) need to be seen very explicitly in the paper.

## **Late Submissions.**

Late submissions are not permitted, and extensions will only be made in exceptional circumstances (e.g., health-related problems).