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Getting to know me

■ Dr. Hamza Mohammad Alkuime

EDUCATION

PhD	University of Idaho (Uof I), Moscow, ID, USA Civil Engineering / Pavement Materials	December 2019
MS	Jordan University of Science and Technology (JUST), Irbid, Jordan Civil Engineering/Transportation Engineering	August 2015
BS	The Hashemite University (HU), Zarqa, Jordan Civil Engineering	June 2013

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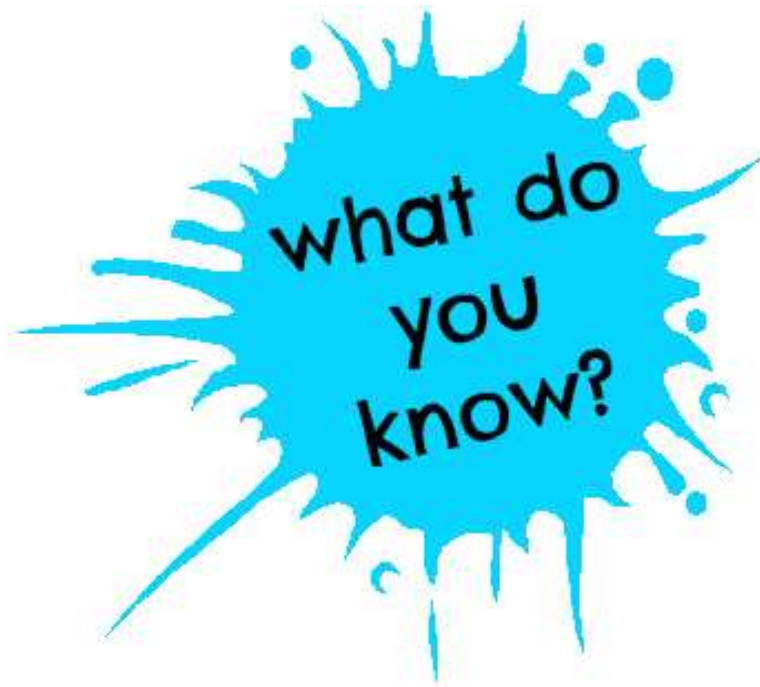
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Getting to know me

- Office : E 3029
- Email : Alkuime@hu.edu.io
- Office Hour : Sun, Tue, Thu. (10:00 - 11:30 p.m.)

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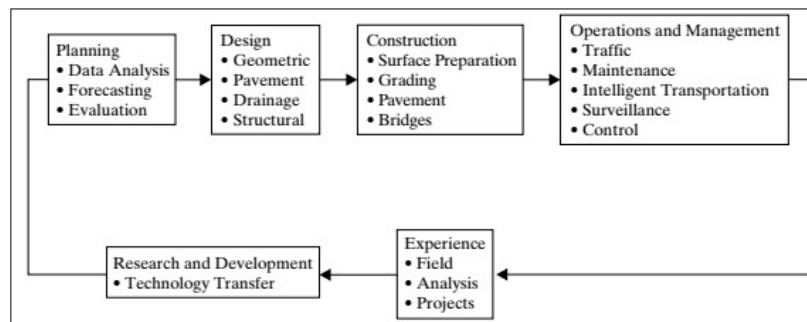
What do you expect from this course ?

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Transportation Engineering

- Transportation Engineering is a branch of the engineering that deals with planning, design, construction, operation, and management of *various transportation systems and their components*, to achieve a safe, efficient, convenient and economical movement of passengers and goods.
- The professional who is concerned with the planning, design, construction, operations, and management of a transportation system



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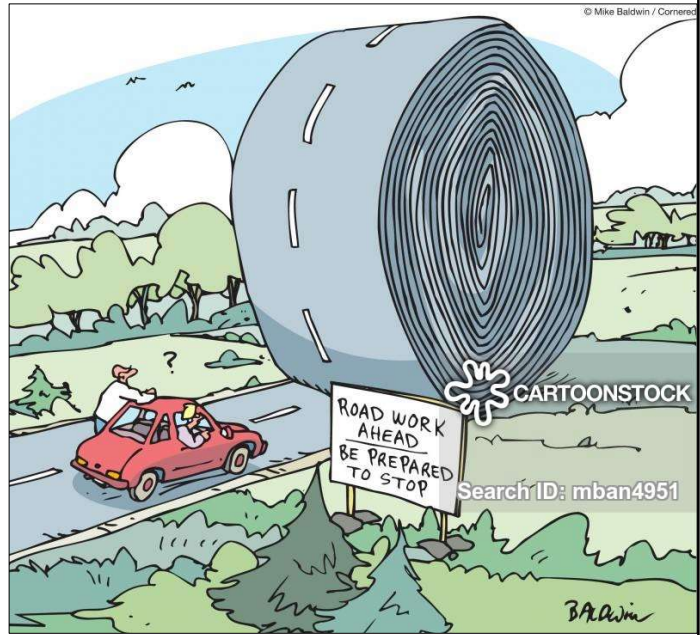
Pavement Engineering

Definition

- Pavement engineering is a branch of **civil engineering** that uses **engineering techniques** to **design and maintain** flexible (asphalt) and rigid (concrete) pavements.



https://en.wikipedia.org/wiki/Pavement_engineering



Pavement Engineering

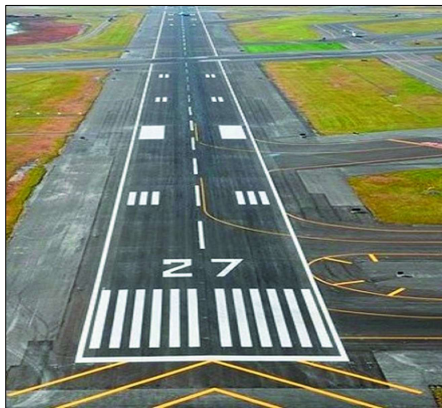


Image source: <https://www.ircgroupp.com/en/services/pavement-engineering/engineered-pavement-design-specifications>

Importance of Pavement Engineering



Image source: <https://www.pinterest.com/pin/338614465702577687/>



Image source: Source: <https://www.quora.com/Why-are-most-runways-made-of-asphalt-and-not-concrete>

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Importance of Pavement Engineering



Image source: <https://www.lrcgroup.com/en/services/pavement-engineering/engineered-pavement-design-specifications>

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Course Description

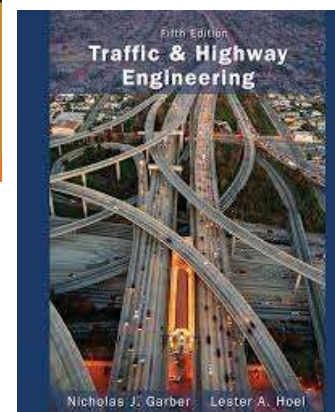
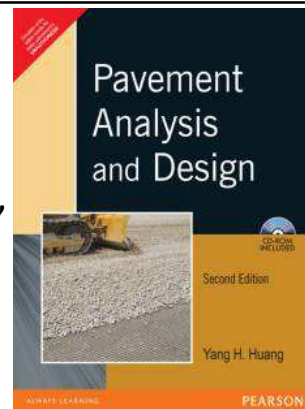
- Pavement types
- Pavement materials; subgrade stabilization methods;
- Principles of mix design using SUPERPAVE;
- Analysis of stresses in flexible and rigid pavements
- Design methods of highway flexible and rigid pavements
- Design of airport flexible and rigid pavement
- Overlay design, Computer applications.

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Textbook

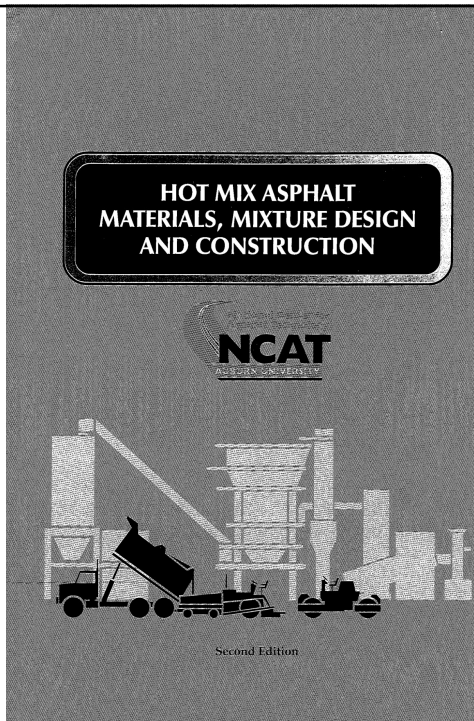
- ***Pavement Analysis and Design***,
2nd Edition. Yang Huang.
Pearson Publishing, 2012
- ***Traffic & Highway Engineering***,
5th Edition. Nicholas Garber and
Lester Hoel. Cengage Learning,
2015



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Textbook



Hot mix asphalt materials mixture design and construction

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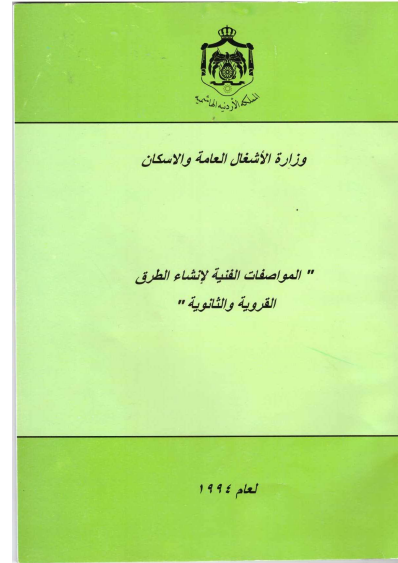
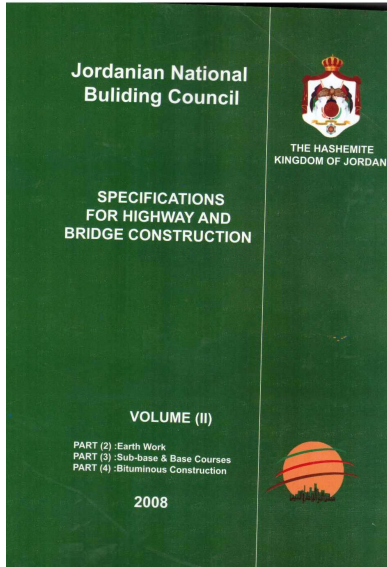
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Jordanian National Building council

Specifications for highway and bridge construction



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Other Supplementary Materials

- **Hot mix asphalt materials mixture design and construction**, E. Ray and Prithvi S. Kandhal and Freddy et al., 2nd Edition., 1996
- **MS-2-Asphalt mix design methods**, Asphalt Institute, 2014
- **Highway Engineering: Pavements, Materials, and Control of Quality**, Athanassios Nikolaides (2015)
- **Principles of Pavement Design**, E. J. Yoder and M. W. Witczak, John Willey, Inc., 1975
- **MS-2-Asphalt mix design methods**, Asphalt Institute, 2014
- **Superpave Fundamentals**, Federal Highway Administration,
- **Specifications for highway and bridge construction**, Jordanian National Building council, (2008)
- **Research articles**

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Major Topics To Be Covered

Topics	No. of Weeks	Contact hours*
Highway Materials (Bituminous Materials, Aggregates, and soil),	6	18
Pavement Types,	1	3
Flexible pavement design (design of Hot Mix Asphalt mixture using Marsha method	3	9
Flexible pavement design (design of pavement thicknesses using AASHTO method)	2	6
Earthwork operations,	1	3
Drainage and drainage structures, and	1	3
Rehabilitation and Highway Maintenance	1	3
Total	15	45

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What you will learn

- Discriminate between different pavement types
- Distinguish the properties of materials used in highway pavements
- Design of flexible pavement layers thickness using AASHTO 1993 method
- Design of hot asphalt mixes using Marshall method
- Develop a basic understanding of new methods for asphalt mix design and pavement structural design

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What you will learn

Discriminate between different pavement types



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What you will learn

Distinguish the properties of materials used in highway pavements



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What you will learn

Design of Hot Asphalt Mixes (HMA) using Marshall method

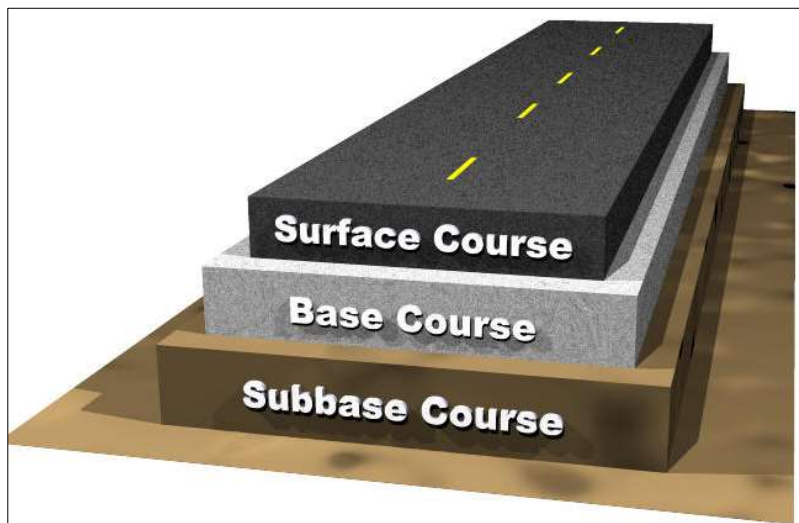


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What you will learn

Design of flexible pavement layers thickness using AASHTO 1993 method



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What you will learn

Production, transportation, laying and compaction of HMA mixes



Image source: <https://pavementinteractive.org/reference-desk/construction/placement/reinforcing-steel-placement/>

Image source: <https://www.thecivilengineering.com/asphalt-concrete-paving-receiving-placement-and-testing-inspection-wearing-and-binder-course/>

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What you will learn

Quality control of production and acceptance of asphalt mixes



Image source: <https://advancetesting.co/materials-testing-services/asphalt-quality-control-testing/>

Image source: https://funnyjunk.com/funny_pictures/4377350/Aussie+council+workers/

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Grading Plan

- 1st Exam (30 Points)
- 2nd Exam (30 Points)
- Final exam (40 Points)
- Extra (up to 5 Points)

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General Notes



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General Notes

- The maximum allowed number of absentees from the course is **six** classes.
 - Exceeding these limits will lead to prevention from attending the final exam.
- Beware of **Plagiarism**:
 - Copying and handing in for credit someone else's work.
 - Any plagiarism case will result in an automatic '**F**' for the course
- **No MAKE-UP EXAMS**

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Pavement Engineering

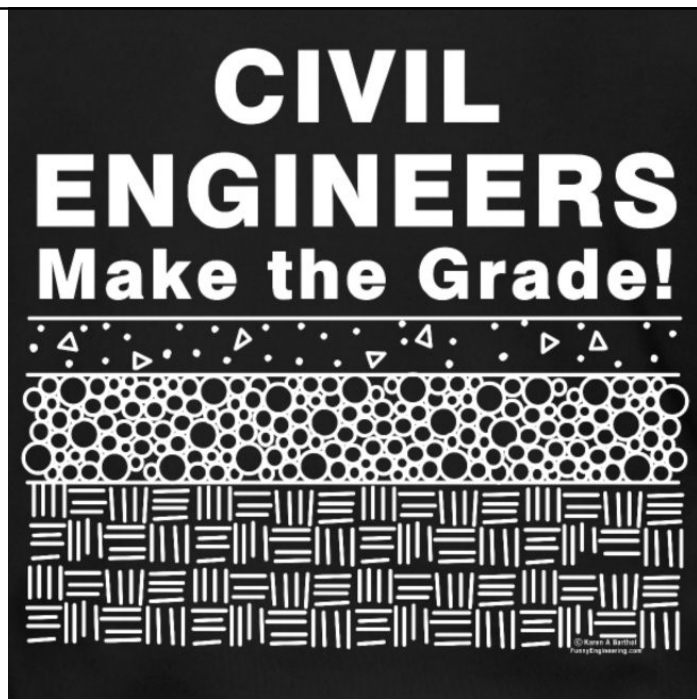


Image source: <https://shop.spreadshirt.com/FunnyEngineering/make+the+grade-ASd89cf53162c5f464e75805f?productType=198>

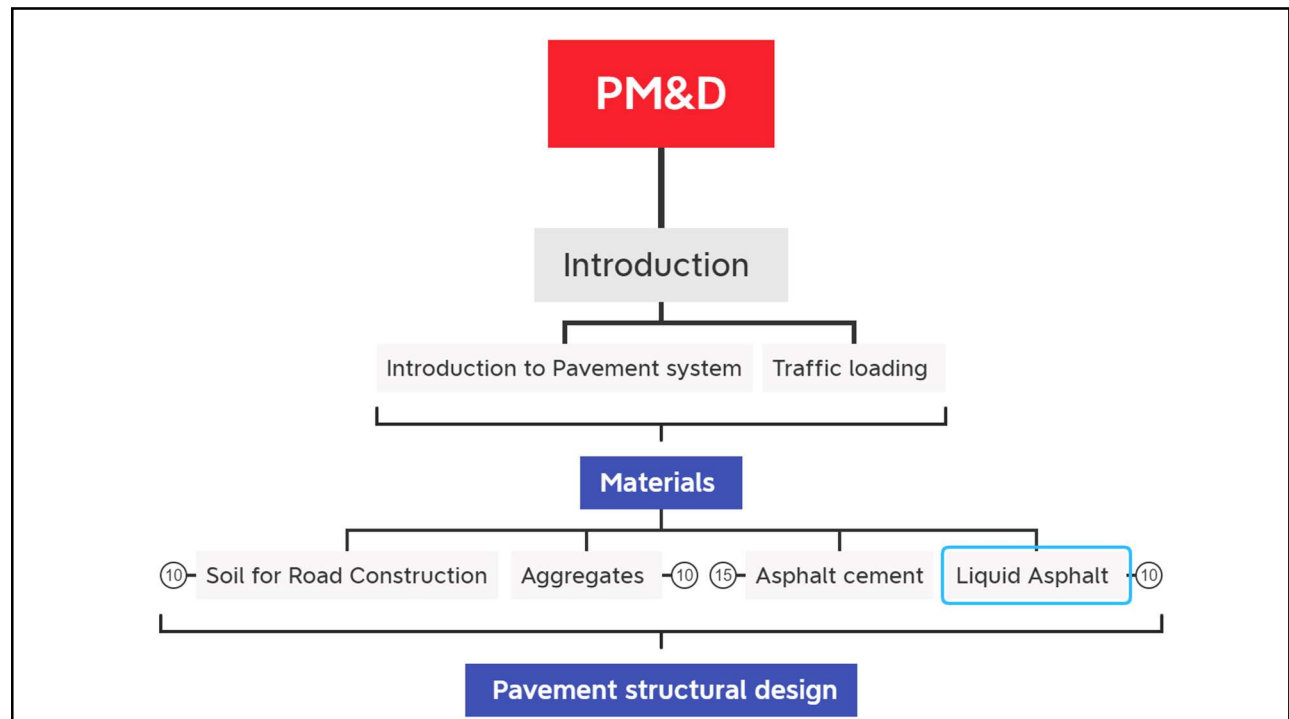
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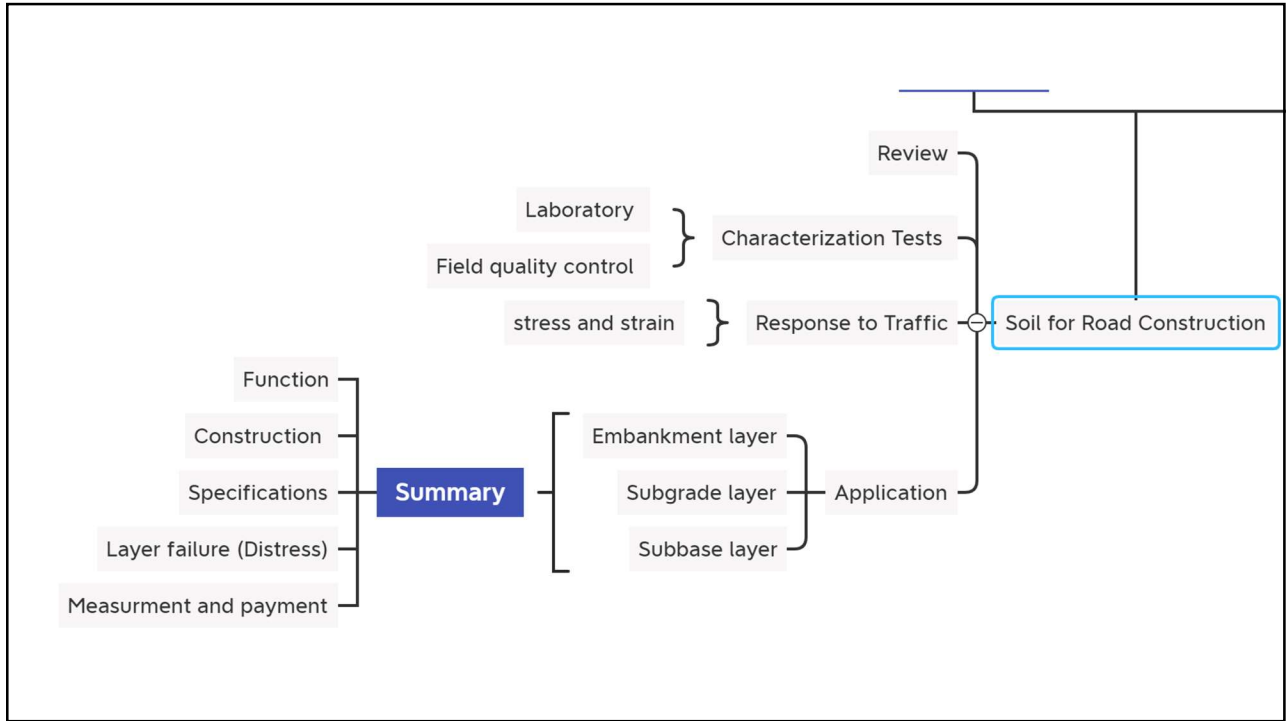
Course Map

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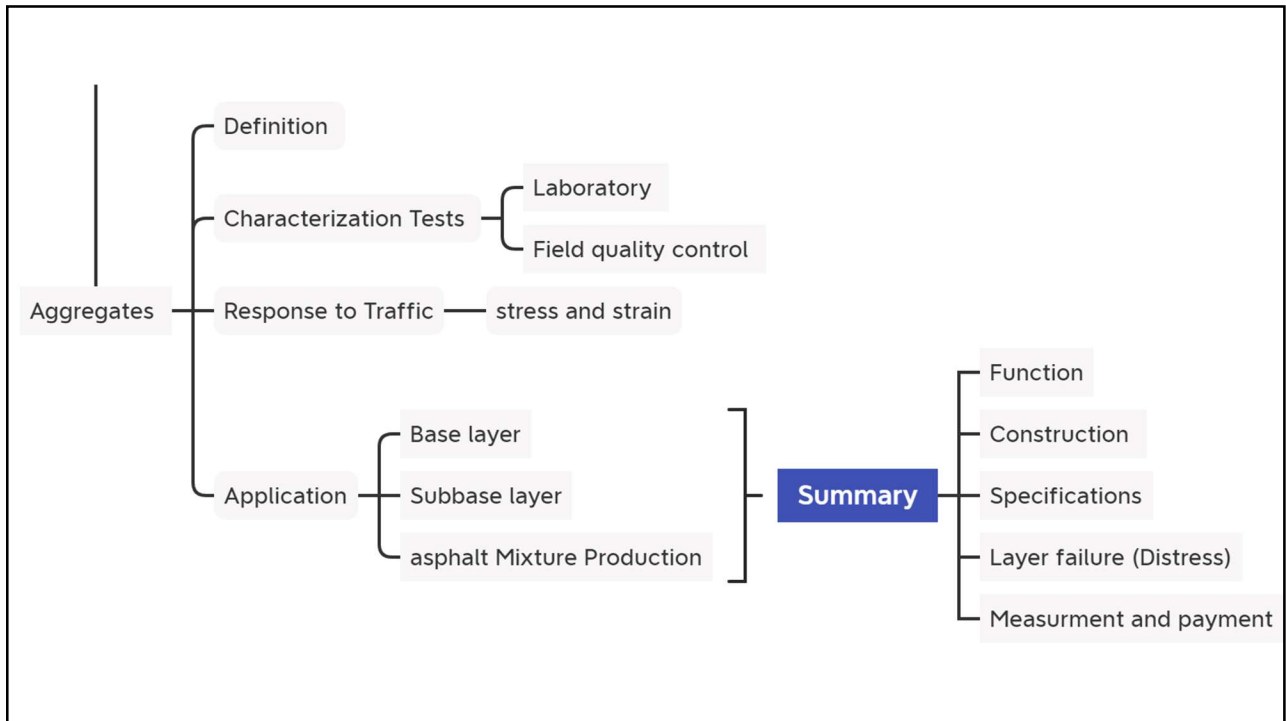
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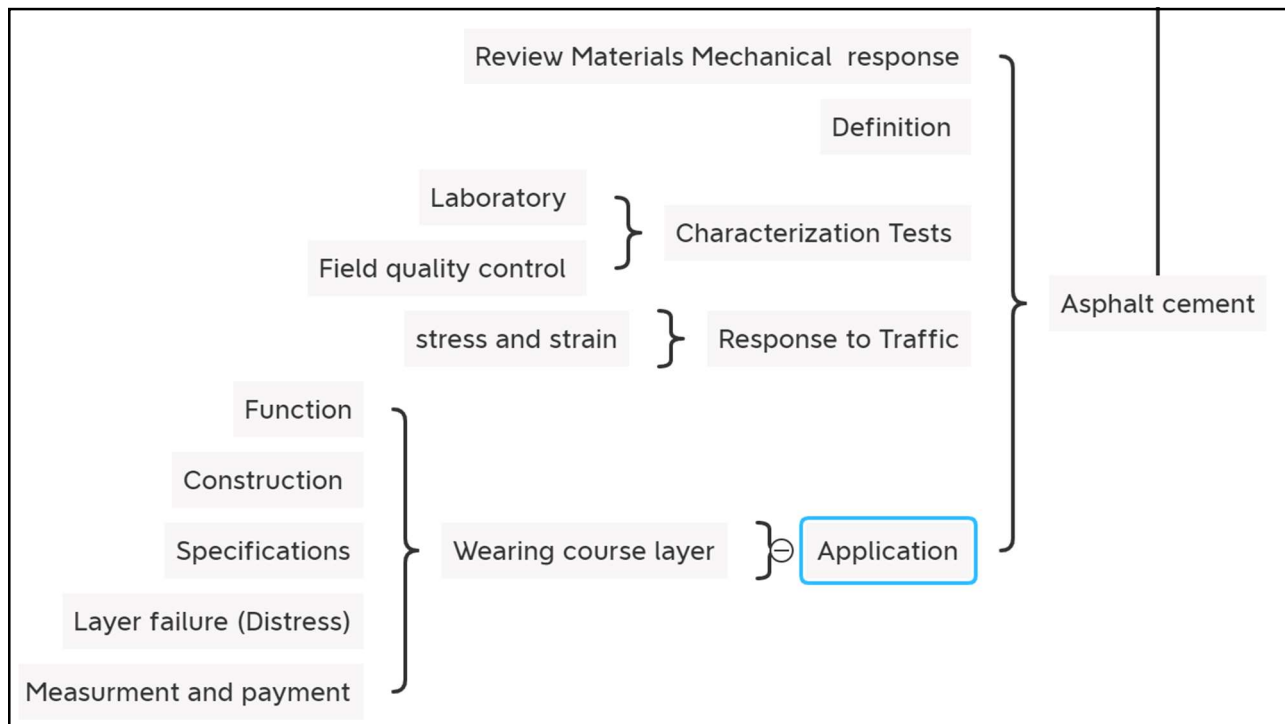
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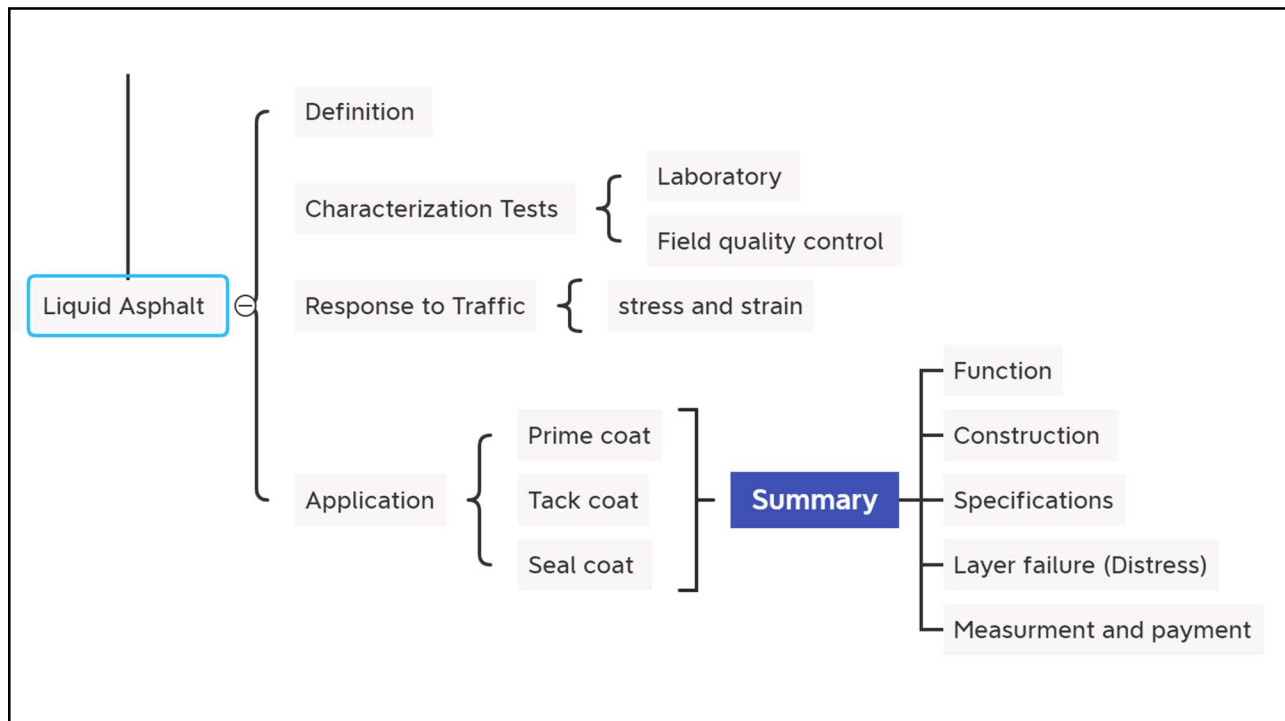
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