

## Lab Report 5 – Rubric for Concrete Strength Report (All Sections)

Student/s \_\_\_\_\_

Grade \_\_\_\_\_

Criteria Note: This Lab is worth 200 points	Good- The writer included all moves, and content was accurate and clear.	Adequate-the writer included <i>most</i> moves and content was mostly accurate and somewhat clear.	Needs work- the writer left out key moves; content was inaccurate and/or unclear in a number of places
<b>Front Matter: (5 pts)</b> -Title Page -Abstract -Table of Contents -List of Tables and List of Figures	5	4	2-3
<b>Introduction: (20pts)</b> -Explain importance of concrete strength testing. -Explain background: mechanical properties for design, analysis and quality control; type of testing and standards for these materials-- i.e. compressive strength; bending strength; indirect tensile strength; shear strength, modulus of elasticity E, NDE. -Cite references; use numbered format IEEE/ see <a href="http://www.ieee.org/documents/ieeecitationref.pdf">http://www.ieee.org/documents/ieeecitationref.pdf</a> -Overview current study parameters/tests.	18-20	15-17	7-14
<b>Experimental Procedure (20 pts)</b> -Use past tense. -Use full sentences, paragraphs, section titles. -Identify detailed methods, materials for replication. -Explain gathered raw data vs. computed results. -Use appropriately labeled and referenced visuals. -Refer to standards (ASTM/ AASHTO) used. -Refer to correct equations or formulas (shear, (compressive, bend, tensile, E, density, NDE). -Explain physical traits you observed (fracture surface (aggregate-paste distribution); honeycomb, cracks, defects etc.).	18-20	15-17	7-14
<b>Results: (60 pts)</b> -Present results for each property/test in distinct paragraphs/ sections -Sum up each finding in clear sentences. -As necessary, remind reader how you arrived at findings. -Refer to accurate, labeled, titled tables and figures that illustrate findings. -Discuss/explain relevant data to support each finding. -Refer to Appendices with raw data and calculations as needed. - Present individual results <i>and</i> cumulative (all	50-60	40-49	30-39

<p>group) results.</p> <p><i>-Individual results: For Lab 5, include:</i></p> <ul style="list-style-type: none"> <li>*Compressive strength plot: stress-strain behavior, <math>f'_c</math>, E-chord modulus.</li> <li>*Individual and average <math>F'_c</math>.</li> <li>*Split tensile strength.</li> <li>*Flexural Strength (3X3", 6X6" beams), using 3-point load and 4-point load equations.</li> <li>*Shear test results, using horizontal beam shear equation and direct short beam equation.</li> <li>*Density or Unit Weight.</li> <li>*E(ACI equation).</li> <li>*E(experimental).</li> <li>*Plot Mohr's circle for uniaxial compression</li> </ul> <p><i>-Cumulative results: For Lab 5, include trends such as but not limited to:</i></p> <ul style="list-style-type: none"> <li>*plot w/c vs. compressive strength;</li> <li>*plot density vs. <math>F'_c</math>, <math>F'_t</math>, <math>F'_b</math>, <math>F'_v</math> and E;</li> <li>*plot square root <math>F'_c</math> strength vs. flexural, tensile and shear strength (show trend lines and compare to ACI equations).</li> <li>*Plot <math>F'_c</math>-Schmidt hammer vs. compressive str.</li> <li>*Present Cumulative Results Table from Lab2 on fresh concrete properties and use to discuss correlations with hardened concrete properties; i.e, w/c ratio, air content, density, slump.</li> </ul>			
<p><b>Discussion: (40 pts)</b></p> <ul style="list-style-type: none"> <li>-Remind reader of purpose.</li> <li>-Sum up major findings.</li> <li>-Link findings to prior research/standards and discuss anomalies.</li> <li>-Discuss implications and relationships. <i>For Lab 5</i>, discuss relationships related to mix design and hardened concrete properties such as: w/c, curing time, porosity, density, strength and mechanical properties (comp, bend, shear, tensile, E); slump, air, density, water content, strength; type of failure, shear or cone (observe the fractured surface).</li> </ul>	35-40	29-34	23-28
<p><b>Appendices: (20 pts)</b></p> <ul style="list-style-type: none"> <li>-Raw data, spreadsheets, sample calculations.</li> <li>-Label each appendix (A, B, C) in text, in the order in which it is mentioned in text.</li> </ul>	18-20	15-17	7-14
<p><b>References: (5 pts)</b></p> <ul style="list-style-type: none"> <li>-Cite references in-text; use APA format/ see <a href="https://owl.english.purdue.edu/owl/resource/560/10/">https://owl.english.purdue.edu/owl/resource/560/10/</a></li> <li>-Reference page with ordered list of all citations noted in text.</li> <li>-Proper formatting for each entry.</li> </ul>	5	4	2-3
<p><b>Mechanics and Style (20 pts)</b></p> <ul style="list-style-type: none"> <li>-Readable, well-structured sentences.</li> <li>-Correct grammar, punctuation.</li> <li>-Use of appropriate terminology.</li> </ul>	18-20	15-17	7-14