

(Textile Engineering Department)

Graduate

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**Course Title:** Garment Manufacturing with Engineered Properties

**Lecturer:** Dr. Fatemeh Mousazadegan

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**Course Topics:**

- Introduction of pressure garment- Application of pressure garment- Importance of the applied pressure- Effective factors in pressure garment- Laplace Law for pressure calculation- Reduction factor in pressure garment- A Model for Determination of reduction factor in terms of fabric property and required pressure-
- Study of influencing factors on the exerted pressure consisted of cylinder's radius, fabric property and reduction factor- Consistency of computed pressure by Laplace law and measured pressure- Effect of aspect ratio on the pressure of pressure garment- Prediction of garment's pressure in multi-layer garments- Impact of fabric's mechanical property on the applied pressure-
- Importance of fabric's isotropic characteristic on the application of uniform pressure in various direction- Evaluation the influence of fabric direction on its tensile behavior- Application of fabric composition in order to obtain a determined pressure- Investigation of accuracy of Laplace law on the applied pressure on human body
- Comparison of accuracy of Laplace law in fabric and isotropic material- Measurement of tension in curve and flat region in fabric deformation process- the effect of friction on the fabric's tension
- Tension and pressure relaxation of pressure garment- Measurement of dynamic pressure in pressure garment- Dynamic pressure attenuation in pressure garment
- Examination of spherical fabric deformation- evaluation of fabric's bagging behavior in pressure garment- Importance of elastic recovery on keeping shape-
- Introduction of protective clothing against stab penetration- Relation of knife's geometry and penetration energy- Mechanism of knife penetration- Analysis of Knife Penetration through Woven Fabrics-
- Analysis of exerted loads on the fabrics due to the knife penetration and its energy dissipation- Forces Required for a Knife to Penetrate a Variety of Clothing Types
- Midterm exam the influence of wool structures on the stab resistance of woven body armor panel

- A comparison of penetration caused by different types of arrowheads on loose and tight fit clothing- the influence of stabbing speed on the penetration force and depth
- The effect of the stabbing angle on the fabric damages
- The influence of participant sex, fabric tensile property and laundering on the severance length in a fabric
- Investigation of the correlation of knife damage in clothing and the skin wound
- Forensic evidence in apparel fabrics due to stab events
- The influence of various fabric structure on its stab resistance performance

### **Reading Resources:**

- Handbook of Medical Textiles (Woodhead Publishing Series in Textiles) -Woodhead Publishing (2011)
- Compression Garments in Sports: Athletic Performance and Recovery- Springer-2016
- Textile for Protection- Wood Head-2005
- Related Research Papers