# Advanced Algebra

## Outline

**Free groups, Free abelian groups,**
**Generators and relations,**
**Homomorphisms and exact sequences,**
**The isomorphism theorems for modules,**
**Modules,Direct sums and free modules,**
**Projective modules, injective modules**
**The Hilbert basis theorem, localization,**
**Chain conditions on modules and rings,**
**Hom and duality, Tensor produncts, Algebras**

## References

[1] R. B. Ash, *Basic abstract algebra*, Dover Publications, Inc., Mineola, 2007.

[2] T. W. Hungerford, *Algebra*, Springer-Verlag, New York, 1980.