



Short Course

Organic Synthesis and Drug Development

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- 1- The pharmaceutical industry and organic synthesis: general considerations.
- 2- Sustainable (green) chemistry: new procedures for old reactions (aromatic substitution, α -alkylation of aldehyde and ketones, functional group interconversions).
- 3- The preparation of enantiomerically pure compounds: chiron approach, chiral auxiliary, chiral catalysts, organocatalysis.
- 4- Selected examples on the synthesis of drugs:
 - 4a- Steroid contraceptives and anti-inflammatories,
 - 4b- Anticancer drugs and statins plus prostaglandins,
 - 4c- Synthetics - *viagra* and me-too: the bad drugs,
 - 4d- Antibiotics, from sulfas to vancomycin: resistance

Suggested Bibliography

Brocksom, T. J.; Desiderá, A. L.; Alves L. C.; de Oliveira, K. T. "The New Directions of Organic Synthesis", *Current Organic Synthesis*, 2015, 12, 496-522.

Barreiro, E. J.; Fraga, C. A. M.; *Química Medicinal*, Artmed Editora, 3ª Edição, 2014.

Lee, S.; Robinson, G. *Process Development: Fine Chemicals from Grams to Kilograms*, Oxford U. Press, 1995.

Saunders, J. *Top Drugs: Top Synthetic Routes*, Oxford U. Press, 2000.