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| **COURSE DETAILS** |
| Course title | Medicinal Chemistry –III |
| Entry qualifications | Must be completed Medicinal Chemistry –I & II |
| Maximum number in class | 30 |
| Average class contact hours per week | 3 Hours |
| Examining body | Mashiur Rahman |
| Academic level | B. Pharm |
| Duration of course | 6 Months |
| Teacher/Course Leader responsible for the course | Mashiur Rahman |

Brief outline of the course content and its delivery:

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| **Lecture No.** | **Topics Name/****Chapter Name** | **Sub-topics /****Lecture Topics** |
| L-1 | **Combinatorial** **Chemistry** | Introduction & general discussion on combinatorial chemistry. |
| L-2 | Definition, design & general concept of Combinatorial synthesis, its role in medicinal chemistry. |
| L-3 | Solid Phase technique- advantages & requirements. Chemistry of linkers & protecting group. Merrifield’s peptide synthesis. |
| L-4 | Parallel synthesis. Mixed synthesis- mix & split method, isolating active compound. |
| L-5 | Structure determination of active compound. Encoding combinatorial libraries. Solution phase Combinatorial synthesis- parallel techniques. |
| L-6 | Mixed solution phase synthesis. Chemistry & use of soluble supports. Limitation of combinatorial synthesis. Designing of combinatorial synthesis. |
| **QUIZ TEST-1, Marks-10** |
| L-7 to L-8 | **Chemical & physicochemical property & SAR of some medicinal groups** | Proton pump inhibitors- structure of proton pump, mechanism of acid secretion, synthesis of a PPI. Mechanism, design & SAR of proton pump inhibitors |
| L-9 | Tranquilizing agent-types & mechanism. |
| L-10 to L-11 | Anti-diarrheal agents: Chemistry, mechanism & SAR. |
| L-12 | Anti-tubercular agents: therapeutic classification, mechanism & SAR. |
| **QUIZ TEST-2, Marks-10** |
| **Assignment (Marks 5)** |
| **Midterm Examination (25 marks)** |
| L-13 | **Chemical & physicochemical property & SAR of some medicinal groups** | Anti-asthmatic drug: Pathogenesis & treatment of asthma. Therapeutic classification of anti asthmatic drug, their mechanism & SAR. |
| L-14 | Anti-malarial agents: Causes of malaria, stages of development of malaria & target for drug action. Malarial vaccines. Drug therapy |
| L-15 | Mechanism, SAR & metabolism of various types of anti-malarial drugs. Polycyclic Anti-malarial Drugs, New Anti-malarial Drugs |
| **Presentation (5 marks)** |
| L-16 | **Chemical & physicochemical property & SAR of some medicinal groups** |  Anti-cancer agents: tumor cell properties, biological properties of anticancer drugs. Types of anticancer drugs. |
| L-17 | Alkylating agents- Chemistry & mechanism. Alkylation of guanine of DNA. |
| L-18 | Antimetabolites- Chemistry, synthesis & mechanism. |
| L-19 | Anticancer antibiotics & Other anticancer agents. |
| **QUIZ TEST-3, Marks-10** |
| L-20 | **Chemical & physicochemical property & SAR of some medicinal groups** | Membrane acting drugs: Drugs acting on Ca++, K+, Na+ channels. |
| L-21 | Antithyroid drugs: Disease involved in thyroid gland, Types of therapeutic agents |
| L-22 | Thyroid hormone analogues- SAR & conformational properties. |
| L-23 | Hormonal drugs: Clinical applications of Oral contraceptives and steroidal hormones, their aspects of biosynthesis. Hormone replacement therapy. |
| L-24 |
| L-25 | Hormonal drugs: Drug metabolism & SAR. |
| L-26 | **Natural products and secondary metabolites as drugs** | Vitamins: The clinical aspects of the vitamins and their effects on free radicals, synthesis of the vitamins |
| L-27 | Vitamins: synthesis & mechanism of action of vitamins. |
| L-28 | Alkaloids: Alkaloids as pharmaceutical raw materials, opium and analogues of opium. |
| L-29 | Alkaloids: synthesis of papaverine and ephedrine, clinical comparison of ephedrine and epinephrine. |
| L-30 | Glycosides: Chemical and clinical aspects of digoxin and other digitalis glycosides, Steroids & Antisteroids |
|  **Semester Final Examination (50 marks)**  |