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| **Unudlogo2** | **RENCANA PEMBELAJARAN SEMESTER**  **TEORI BILANGAN** |
| **Program Studi Matematika**  **Fakultas Matematika dan Ilmu Pengetahuan Alam**  **Universitas Udayana** |

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| 1 | **Mata Kuliah** | | | | **Nama** | | | | | | | | **Kode** | | | | | | | | | | | **Bobot** | | | | | | | | **Semester** | | | | | | | | **Mata Kuliah Syarat** | | |
| **Teori Bilangan** | | | | | | | | **MA716530** | | | | | | | | | | | 3 sks | | | | | | | | V | | | | | | | | Kalkulus , PMM | | |
| 2 | **Dosen Pengampu** | | | | Kartika Sari, S.Si., M.Sc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kantor : Gedung UKM Lantai 2  Kontak Telp 081936252479 | | | | | | | | | | | | | | | | | | | | Ruang Kelas: Ruang Sidang,gedung UKM lantai 2, Kampus Bukit Jimbaran | | | | | | | | | | | | | | | | | |
| 3 | **Deskripsi Mata Kuliah** | | | | Mata Kuliah Teori Bilangan dirancang untuk mahasiswa agar setelah mengikuti mata kuliah ini; mahasiswa menguasai konsep teori bilangan, yang ditunjukkan dengan kemampuan bekerja secara individu maupun tim dalam menerapkan konsep konsep sistem bilangan bulat dan sifat-sifatnya, keterbagian bilangan bulat, kekongruenan, Faktorisasi prima (FPB, KPK dan Teorema Dasar Aritmetika), persamaan diopantin linear, persamaan diopantin non linear , aplikasi kekongruenan lainnya (Teorema Sisa Cina, Teorema Fermat, Teorema Euler dan Teorema Wilson) serta Fungsi Tangga dalam menyelesaikan masalah matematika dengan baik: **Untuk dapat** mengembangkan capaian pembelajaran tersebut maka mahasiswa akan mempelajari sistem bilangan bulat dan sifat-sifatnya, kekongruenan, faktorisasi prima (meliputi FPB dan KPK, bilangan prima dan Teorema Dasar Aritmatika), persamaan diopantin linear (meliputi Algoritma Euclid, Kongruensi Linear, dan *Chinese Remainder Theorem*), persamaan diopantin linear dua atau lebih variabel, persamaan diopantine non linear dan cara-cara penyelesaiannya, aplikasi kekongruenan bilangan bulat lainnya: Teorema Fermat, Wilson dan Euler. Selain itu dalam mata kuliah ini mahasiswa juga mempelajari konsep Fungsi Tangga  Untuk dapat mengambil mata kuliah ini, mahasiswa harus sudah mengambil mata kuliah Pengantar Matematika Modern, Matematika Diskret dan Kalkulus. Materi mata kuliah ini merupakan materi minimal yang harus dikuasai bagi pembina olimbiade matematika tingkat SMA untuk materi Teori Bilangan. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | **CPL yang Dibebankan pada Mata Kuliah** | | | | PP 1 (B)  KU 1  KK1  S6 | | Menguasai konsep teoretis matematika , yaitu konsep teori bilangan.  Mampu menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam konteks pengembangan atau implementasi ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora yang sesuai dengan bidang keahliannya, yang ditunjukkan dengan mampu menerapkan konsep konsep sistem bilangan bulat dan sifat-sifatnya, keterbagian bilangan bulat, kekongruenan, Faktorisasi prima (meliputi: FPB, KPK dan Teorema Dasar Aritmetika), persamaan dipantin linear dan kekongruenan linear, persamaan diopantin non linear, aplikasi kekongruenan lainnya ( Teorema Sisa Cina, Teorema Fermat, Teorema Euler dan Teorema Wilson ) serta Fungsi Tangga dalam menyelesaikan masalah matematika.  Mampu mengembangkan pemikiran matematis, yang diawali dari pemahaman prosedural / komputasi hingga pemahaman yang luas meliputi eksplorasi, penalaran logis, generalisasi, abstraksi, dan bukti formal  Mampu bekerja sama dan memiliki kepekaan sosial serta kepedulian terhadap masyarakat dan lingkungan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | **Capaian Pembelajaran Mata Kuliah** | | | | * Menguasai teori bilangan (PP1) * Mampu menerapkan konsep sistem bilangan bulat dan sifat-sifatnya, kekongruenan, Faktorisasi prima (meliputi: FPB, KPK dan Teorema Dasar Aritmetika), Persamaan diophantine linear , aplikasi kekongruenan lainnya ( Teorema Sisa Cina, Teorema Fermat, Teorema Wilson dan Teorema Euler) serta Fungsi Tangga dalam menyelesaikan masalah matematika (KU 1), baik berupa masalah yang berkaitan dengan penerapan langsung, eksplorasi maupun masalah pembuktian (KK1) * Mahasiswa dapat bekerja dalam suatu tim dengan baik untuk menyelesaikan masalah-masalah eksplorasi dan pembuktian (S6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | **Bahan Kajian (Materi Pembelajaran)** | | | | 1. Review Bukti Langsung, tak Langsung dan dan Induksi Matematika. 2. Sistem Bilangan Bulat dan Barisan Fibonacci 3. Keterbagian Bilangan Bulat : definisi keterbagian dan sifat-sifatnya, algoritma pembagian dan identitas-identitas aljabar 4. Kekongruenan Bilangan Bulat 5. Ketunggalan Faktorisasi : FPB dan KPK , bilangan prima dan Teorema Dasar Aritmatika. 6. Persamaan Diopantin Linear : Algoritma Euclid, Persamaan Diopantin Linear 2 Variabel, Kongruensi Linear, Persamaan Diopantin Linear Dua Variabel atau lebih 7. Persamaan Diopantin Linear Dua atau Lebih Variabel 8. Persamaan Diopantin Non Linear dan Cara-Cara Pemecahannya. 9. Aplikasi Kekongruenan Bilangan Bulat Lainnya: Teorema Sisa Cina, Teorema Fermat, Wilson dan Euler 10. Fungsi Tangga | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | **Rencana Pembelajaran** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke : I** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kemampuan Akhir Mahasiswa | | | | | | *Mampu menerapkan pembuktian langsung, tak langsung dan induksi matematika dengan baik* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria /Indikator Capaian | | | | | | *Ketepatan tahap-tahap pembuktian*  *Kerjasama dalam tim /tingkat partisipasi dan kontribusi dalam kelompok* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian (Materi Pembelajaran): | | | | | | Review Materi Pembuktian Langsung, Tak Langsung dan Induksi Matematika:   * Pembuktian Langsung * Pembuktian Tak Langsung * Induksi Matematika | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sumber Pembelajaran on-line* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Teks* | | | | | *Slide (ppt)* | | | | | | | | *Audio* | | | | | | | | *Video* | | *URL* | | | | | | | | | | | | | |
|  | | | | | * Pembuktian Langsung * Pembuktian Tak Langsung * Induksi Matematika | | | | | | | |  | | | | | | | | *Tutorial simple direct proof example*  *Tutorial* Proof by Contradiction (Method and First Example) | | [*https://www.youtube.com/watch?v=v-Vbw0xONuQ*](https://www.youtube.com/watch?v=v-Vbw0xONuQ)  [*https://www.youtube.com/watch?v=huGWXh4l1M0*](https://www.youtube.com/watch?v=huGWXh4l1M0)  *https://www.youtube.com/watch?v=dMn5w4\_ztSw* | | | | | | | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and self assessment)* * *Tugas terstruktur* | | | | | | | | | | | | | | | * *Aktivitas kelas: Penyampaian kontrak kuliah, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *3 x 60 menit belajar mandiri;*  *3x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | *3 x 50 menit (Aktivitas Kelas)* | | | | | | | | | | | | | | | | | | | | | |
| Penilaian Pembelajaran | | | | | | *Metode* | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | | | | | | *Bobot Nilai* | |
| *On-line* | | | | | | | | *F2F* | | | | | | | *On-line* | | | | | | | | | | | | *F2F* | | | | | | | |
| Tugas Essay dan feedback *Quiz*  *Forum* | | | | | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | *Rubrik holistic* | | | | | | | | | | | | *Rubrik Holistik* | | | | | | | |  | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menulis bukti langsung , tak langsung dan induksi matematika* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | | | | | Aktivitas On-line | | | | | | | | | | | | | | | Aktivitas Kelas | | | | | | | | | | | | | | | | | | | | | |
| Kartika Sari | | | | | | | | | | | | | | | Kartika Sari | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke : II** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kemampuan Akhir Mahasiswa | | | | | | *Mahasiswa mampu menerapkan konsep sistem bilangan bulat dan sifat-sifatnya dalam menyelesaikan masalah matematika* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria /Indikator Capaian | | | | | | *Ketepatan langkah-langkah menerapkan konsep sistem bilangan bulat dan sifat-sifatnya dalam menyelesaikan masalah matematika*  *Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok.* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | | | | Sistem Bilangan Bulat dan Sifat-Sifatnya | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sumber Pembelajaran on-line* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Teks* | | *Slide (ppt)* | | | | | | | | | | *Audio* | | *Video* | | | | | | | | | | | *URL* | | | | | | | | | | | |
|  | | * *Sistem bilangan bulat dan sifat-sifatnya* * *Barisan Fibonacci* | | | | | | | | | |  | | *You tube turorial sifat-sifat bilangan bulat*  *Yotube tutorial keajaiban barisan fibonacci* | | | | | | | | | | | [*https://www.youtube.com/watch?v=OUnrhnSwG3k*](https://www.youtube.com/watch?v=OUnrhnSwG3k)  [*https://www.youtube.com/watch?v=SjSHVDfXHQ4*](https://www.youtube.com/watch?v=SjSHVDfXHQ4)  [*https://www.youtube.com/watch?v=lXyCRP871VI*](https://www.youtube.com/watch?v=lXyCRP871VI) | | | | | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and self assessment-quiz/forum)* * *Tugas terstruktur:* | | | | | | | | | | | | | | | * *Aktivitas kelas: Pemaparan singkat, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *3 x 60 menit belajar mandiri;*  *3x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | *3 x 50 menit (Aktivitas Kelas)* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | | | | | *Metode* | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | | | | | | | *Bobot Nilai* |
|  | | | | | | *On-line* | | | | | | *F2F* | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | | | | | | | |  |
| *Quiz*  *Forum* | | | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | | | *Rubrik holistic*  *Pilihan ganda*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | | | | | | | |  |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menyelesaian latihan soal* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | | | | | Aktivitas On-line | | | | | | | | | | | | | | | Aktivitas Kelas/Praktikum | | | | | | | | | | | | | | | | | | | | | |
| Kartika Sari | | | | | | | | | | | | | | | Kartika Sari | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke: III dan IV** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kemampuan Akhir Mahasiswa | | | | | | *Mahasiswa mampu menerapkan sifat-sifat keterbagian bilangan bulat dalam menyelesaikan masalah matematika yang berkaitan dengan keterbagian bilangan bulat ; mahasiswa mampu menganalisa suatu masalah keterbagian bilangan bulat dan kemudian menyelesaikannya dengan menggunakan konsep-konsep keterbagian bilangan bulat dengan tepat* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria /Indikator Capaian | | | | | | *Ketepatan langkah-langkah dalam menyelesaikan masalah matematika*  *Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | | | | Keterbagian Bilangan Bulat :   * definisi keterbagian dan sifat-sifatnya, * algoritma pembagian dan * identitas-identitas aljabar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sumber Pembelajaran on-line* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Teks* | | | | | | | | | | *Slide (ppt)* | | | | | | | | | | *Audio* | | | | *Video* | | | | | *URL* | | | | | | | |
| * Divisibility * Division algorithm * Some Algebraic Identities | | | | | | | | | | * *Keterbagian Bilangan Bulat* | | | | | | | | | |  | | | | *Tutorial sifat-sifat keterbagian*  *Tutorial algoritma pembagian* | | | | | *https://www.youtube.com/watch?v=dIfpZzX7bKo*  *https://www.youtube.com/watch?v=XHjSy\_MT7u0* | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and self assessment-Quiz/Forum)* * *Tugas terstruktur* | | | | | | | | | | | | | | | * *Aktivitas kelas: Pemaparan singkat, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *3 x 60 menit belajar mandiri;*  *3x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | *3 x 50 menit (Aktivitas Kelas)* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | | | | | *Metode* | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | | | | *Bobot Nilai* | | | |
| *On-line* | | | | | | *F2F* | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | | | | |  | | | |
| *Quiz*  *Forum* | | | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | | | *Rubrik holistic*  *Soal uraian (Format online)*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | | | | |  | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menyelesaikan soal menyangkut keterbagian bilangan bulat* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | * *Aktivitas kelas: Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke: V** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kemampuan Akhir Mahasiswa | | | | | | *Mahasiswa mampu suatu masalah matematika serta mampu menerapkan konsep kekongruenan bilangan dalam menyelesaikan masalah matematika* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria /Indikator Capaian | | | | | | *Ketepatan langkah-langkah penyelesaian*  *Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | | | | Kekongruenan Bilangan Bulat | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sumber Pembelajaran on-line* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Teks* | | | | | *Slide (ppt)* | | | | | | | | | | | | | | | | *Audio* | | *Video* | | | | | | *URL* | | | | | | | |
| *Kekongruenan* | | | | | * *Contoh-contoh Kekongruenan* | | | | | | | | | | | | | | | |  | | *Tutorial motivasi kekongrenan bilangan bulat* | | | | | | *https://www.youtube.com/watch?v=2tpSU7BJFMI* | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and assessment – quiz/forum)* | | | | | | | | | | | | | | | * *Aktivitas kelas: Pemaparan singkat, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *3 x 60 menit belajar mandiri;*  *3x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | *3 x 50 menit (Aktivitas Kelas)* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | | | | | *Metode* | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | *Bobot Nilai* | | | | | | |
| *On-line* | | | | *F2F* | | | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | |  | | | | | | |
| *Assignment dan feedback*  *Quiz*  *Forum* | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | | | | | *Rubrik holistic*  *Pilihan ganda (Format Online)*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | |  | | | | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menyelesaikan soal kekongruenan bilangan bulat* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | | | | | Aktivitas On-line | | | | | | | | | | | | | | | Aktivitas Kelas/Praktikum | | | | | | | | | | | | | | | | | | | | | |
| Kartika Sari, S.Si., M.Sc | | | | | | | | | | | | | | | Kartika Sari, S.Si., M.Sc | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke: VI dan VII** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I Made Supartha Utama |
| Kemampuan Akhir Mahasiswa | | | | | | Mampu menjelaskan dengan baik konsep-konsep FPB, KPK ,dan bilangan prima ; mampu menjelaskan dengan baik isi Teorema Dasar Aritmetika; mampu menerapkan konsep FPB, KPK, Bilangan prima ataupun Teorema Dasar Aritmetika dalam menyelesaikan masalah matematika | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria /Indikator Capaian | | | | | | Ketepatan dalam menjelaskan konsep FPB, KPK, bilangan prima, dan Teorema Dasar Aritmetika  Ketepatan langkah-langkah penerapan konsep FPB, KPK, bilangan prima, dan Teorema Dasar Aritmetika dalam menyelesaikan masalah matematika  *Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | | | | Ketunggalan Faktorisasi:   * FPB * KPK * bilangan prima * Teorema Dasar Aritmetika | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sumber Pembelajaran online | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *teks* | | | | | | | | | *Slide (ppt)* | | | | | | | | *Audio* | | | | | *Video* | | | | | | | *URL* | | | | | | | |
| * FPB * KPK * bilangan prima * Teorema Dasar Aritmetika | | | | | | | | | * FPB * KPK * bilangan prima * Teorema Dasar Aritmetika | | | | | | | |  | | | | | *Tutorial penerapan teorema dasar aritmetika* | | | | | | | *https://www.youtube.com/watch?v=8CluknrLeys* | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and assessment-Quiz/forum)* * *Tugas terstruktur: long essay asignment* | | | | | | | | | | | | | | | * *Pemaparan singkat, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *2 x 3 x 60 menit tugas mandiri*  *2 x 3 x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | *2 x 3 x 50 menit (Aktivitas Kelas)*  *2 x 170 menit (Praktikum lapangan)* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | | | | | *Metode* | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | *Bobot Nilai* | | | | | | |
| *On-line* | | | | | *F2F* | | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | |  | | | | | | |
| *Assignment dan feedback*  *Quiz*  *Forum* | | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | | | | *Rubrik holistic*  *Pilihan ganda (Format Online)*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | |  | | | | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menyelesaikan masalah matematika menggunakan konsep FPB, KPK , bilangan prima atau Teorema Dasar Aritmatika* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | *Pembelajaran di kelas: Komputer, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | | | | | Kartika Sari, S,Si., M.Sc | | | | | | | | | | | | | | | Kartika Sari, S,Si., M.Sc | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke: VIII (Ujian Tengah Semester)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I Made Supartha Utama |
| Kemampuan Akhir Mahasiswa | | | | | | *Mampu menjawab/menjelaskan pertanyaan tertulis dari fasilitator dengan tepat* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria/Indikator | | | | | | *Mampu menjawab/menjelaskan pertanyaan tertulis dari fasilitator dengan tepat* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | | | | *Seluruh bahan kajian yang telah dipelajari dari minggu ke I sampai minggu ke VII* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | | | | *Belajar mandiri dan Evaluasi pembelajaran* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *6 x 60 menit belajar mandiri;* | | | | | | | | | | | | | | | *3 x 50 menit tes UTS* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | | | | | *Metode* | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | *Bobot Nilai* | | | | | | |
| *On-line* | | | *F2F* | | | | | | | | | | | | *On-line* | | | | | | | | | | | | |  | | *On-line* | | | | | | |
| *Quiz*  *Forum* | | | * *Observation (Q/A)* * *Sumative test* | | | | | | | | | | | | *Rubrik holistic*  *Pilihan ganda dan B/S (Format Online)*  *Forum (Format Online)* | | | | | | | | | | | | |  | | *Quiz*  *Forum* | | | | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | | | | | *online* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* * *Mengerjakan test sumative* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | | | | | *On-line* | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | | | | | Aktivitas On-line | | | | | | | | | | | | | | | Aktivitas Kelas/Praktikum | | | | | | | | | | | | | | | | | | | | | |
| Kartika Sari | | | | | | | | | | | | | | | Kartika Sari | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke: XI , X, XI** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I Made Supartha Utama |
| Kemampuan Akhir Mahasiswa | | *Mampu menentukan FPB dengan menggunakan Algoritma Euclid; Mampu menentukan penyelesaian persamaan diopantin linear dua variabel dengan menerapkan konsep algoritma euclid; Mampu menentukan penyelesaian bentuk kongruensi linear; Mampu mementukan penyelesaian persamaan diopantin linear dua atau lebih dari dua variabel dengan menggunakan konsep kongruensi linear ;* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria/Indikator | | *Ketepatan langkah dalam menentukan FPB menggunakan algoritma Euclid*  *Ketepatan langkah-langkah menentukan penyelesaian persamaan diopantin linear dua variabel dengan menerapkan konsep algoritma euclid;*  *Ketepatan langkah dalam menentukan penyelesaian bentuk kongruensi linear;*  *Ketepatan mementukan penyelesaian persamaan diopantin linear dua atau lebih dari dua variabel dengan menggunakan konsep kongruensi linear*  *Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | *Persamaan Diopantin Linear:*   * *Algoritma Euclid* * *Persamaan Diopantin Linear Dua Variabel* * *Konngruensi Linear* * *Persamaan Diopantin Linear Dua atau Lebih Variabel* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sumber Pembelajaran on-line* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Teks* | | | | *Slide (ppt)* | | | | | | | | | | *Audio* | | | | | *Video* | | | | | | | | | | | | | *URL* | | | | | | | |
| * *Algoritma Euclid* * *Persamaan Diopantin Linear Dua Variabel* * *Konngruensi Linear* * *Persamaan Diopantin Linear Dua atau Lebih Variabel* | | | | *Kongruensi Linear* | | | | | | | | | |  | | | | | *Tutorial menggunakan algoritma Euclid untuk menentukan FPB*  *Tutorial menyatakan FPB sebagai kombinasi linear dua bilangan yang dicari FPBnya*  *Tutorial cara menyelesaikan persamaan diopantin linear dengan menggunakan algoritma euclid*  *Tutorial cara menyelesaikan bentuk kongruensi linear* | | | | | | | | | | | | | [*https://www.youtube.com/watch?v=p5gn2hj51hs*](https://www.youtube.com/watch?v=p5gn2hj51hs)  *https://www.youtube.com/watch?v=qym5D5bhoQs*  *https://www.youtube.com/watch?v=uTFuHRK5Pmk*  *https://www.youtube.com/watch?v=R9uOG42mfNY* | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | *On-line* | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and assessment-Quiz/forum)* * *Tugas terstruktur* | | | | | | | | | | | | | | | | | | * *Pemaparan singkat, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | *On-line* | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *3 x 3 x 60 menit belajar mandiri;*  *3 x 3x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | | | | *3 x 3 x 50 menit (Aktivitas Kelas)* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | *Metode* | | | | | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | *Bobot Nilai* | | | | | | |
| *On-line* | | | | | | | *F2F* | | | | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | |  | | | | | | |
| *Assignment dan feedback*  *Quiz*  *Forum* | | | | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | | | | | | *Rubrik holistic*  *Soal uraian (Format Online)*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | |  | | | | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | *On-line* | | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menyelesaikan latihan soal yang berkaitan dengan konsep algoritma euclid, persamaan diopantin linear dan kongruensi linear* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | *On-line* | | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | Aktivitas On-line | | | | | | | | | | | | | | | | | | | Aktivitas Kelas | | | | | | | | | | | | | | | | | | | | | |
| Karika Sari | | | | | | | | | | | | | | | | | | | Kartika Sari | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke: XII** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I Made Supartha Utama | |
| Kemampuan Akhir Mahasiswa | | *Mampu menentukan penyelesaian persamaan diopantin non linear menggunakan metode yang tepat dengan baik* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria/Indikator | | *Ketepatan memilih metode dalam menyelesaikan persamaan diopantin non linear*  *Ketepatan langkah dalam menentukan penyelesaian persamaan diopantin non linearmenggunakan metode yang tepat*  *Keaktifan dalam kelompok* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | *Persamaan Diopantin Non Linear* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sumber Pembelajaran on-line* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Teks* | | | | *Slide (ppt)* | | | | | | | | | | *Audio* | | | | | *Video* | | | | | | | | | | | | | *URL* | | | | | | | |
| * *Metode-Metode menentukan penyelesaian persamaan diopantin non linear* | | | | *Beberapa Metode menentukan penyelesaian persamaan diopantin non linear* | | | | | | | | | |  | | | | | Diophantine Equation trick of proving no solutions exist for an diophantine equation | | | | | | | | | | | | | *https://www.youtube.com/watch?v=BVm1Xvv\_Zig* | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | *On-line* | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and assessment-Quiz/forum)* * *Tugas terstruktur* | | | | | | | | | | | | | | | | | | * *Pemaparan singkat, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | *On-line* | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *2 x 3 x 60 menit belajar mandiri;*  *2 x 3x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | | | | *2 x 3 x 50 menit (Aktivitas Kelas)* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | *Metode* | | | | | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | *Bobot Nilai* | | | | | | |
| *On-line* | | | | | | | *F2F* | | | | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | |  | | | | | | |
| *Assignment dan feedback*  *Quiz*  *Forum* | | | | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | | | | | | *Rubrik holistic*  *Soal uraian (Format Online)*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | |  | | | | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | *On-line* | | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menyelesaikan latihan soal menentukan penyelesaian persamaan diopantin non linear* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | *On-line* | | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | Aktivitas On-line | | | | | | | | | | | | | | | | | | | Aktivitas Kelas | | | | | | | | | | | | | | | | | | | | | |
| Karika Sari | | | | | | | | | | | | | | | | | | | Kartika Sari | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke-XIII dan XIV** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kemampuan Akhir Mahasiswa | | *Mampu menerapkan dengan baik konsep Teorema Sisa Cina, Teorema Fermat, Teorema Wilson ataupun Teorema Euler dalam menyelesaikan masalah matematika* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria/Indikator | | *Ketepatan langkah dalam menyelesaikan masalah matematika dengan menggunakan Teorema Sisa Cina, Teorema Fermat, Teorema Wilson ataupun Teorema Euler ;Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | *Aplikasi Kekongruenan:*   * *Teorema Sisa Cina,* * *Teorema Fermat,* * *Teorema Wilson* * *Teorema Euler* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sumber Pembelajaran on-line* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Teks* | | | | *Slide (ppt)* | | | | | | | | | | *Audio* | | | | | *Video* | | | | | | | | | | | | | *URL* | | | | | | | |
| * *Teorema Sisa Cina,* * *Teorema Fermat,* * *Teorema Wilson* * *Teorema Euler* | | | | * *Teorema Sisa Cina,* * *Teorema Fermat,* * *Teorema Wilson* * *Teorema Euler* | | | | | | | | | |  | | | | | *Tutorial penerapan teorema sisa cina*  *Tutorial Teorema Fermat*  *Tutorial contoh penerapan Teorema Fermat Kecil*  *Tutorial penjelasan makna Teorema Wilson*  *Tutorial Contoh penerapan Teorema Wilson*  *Tutorial penerapan Teorema Euler* | | | | | | | | | | | | | [*https://www.youtube.com/watch?v=pIPcxz3K1eQ*](https://www.youtube.com/watch?v=pIPcxz3K1eQ)  [*https://www.youtube.com/watch?v=7C0ZMLdzDAo*](https://www.youtube.com/watch?v=7C0ZMLdzDAo)  [*https://www.youtube.com/watch?v=W6tKAAyTczw*](https://www.youtube.com/watch?v=W6tKAAyTczw)  *https://www.youtube.com/watch?v=Jl3wSX0kMCE*  [*https://www.youtube.com/watch?v=IW0bco1a788*](https://www.youtube.com/watch?v=IW0bco1a788)  *https://www.youtube.com/watch?v=FHkS3ydTM3M* | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | *On-line* | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and assessment-Quiz/forum)* * *Tugas terstruktur* | | | | | | | | | | | | | | | | | | * *Pemaparan singkat, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | *On-line* | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *2 x 3 x 60 menit belajar mandiri;*  *2 x 3x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | | | | *2 x 3 x 50 menit (Aktivitas Kelas)* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | *Metode* | | | | | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | *Bobot Nilai* | | | | | | |
| *On-line* | | | | | | | *F2F* | | | | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | |  | | | | | | |
| *Assignment dan feedback*  *Quiz*  *Forum* | | | | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | | | | | | *Rubrik holistic*  *Soal uraian (Format Online)*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | |  | | | | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | *On-line* | | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menyelesaikan latihan soal penerapan Teorema Sisa Cina, Teorema Fermat, Teorema Wilson atau Teorema Euler* | | | | | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | *On-line* | | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | Aktivitas On-line | | | | | | | | | | | | | | | | | | | Aktivitas Kelas | | | | | | | | | | | | | | | | | | | | | |
| Karika Sari | | | | | | | | | | | | | | | | | | | Kartika Sari | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke-XV Fungsi Tangga** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kemampuan Akhir Mahasiswa | | *Mampu menerapkan dengan baik konsep fungsi tangga dalam menyelesaikan masalah matematika* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria/Indikator | | *Ketepatan langkah dalam menyelesaikan masalah matematika dengan menggunakan konsep fungsi tangga ;Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian: | | | *Fungsi tangga:*   * *Fungsi Floor,* * *Fungsi Ceiling* * *Fungsi Bulat* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sumber Pembelajaran on-line* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Teks* | | | | *Slide (ppt)* | | | | | | | | | | *Audio* | | | | | *Video* | | | | | | | | | | | | | *URL* | | | | | | | |
| * *Fungsi Floor,* * *Fungsi Ceiling* * *Fungsi Bulat* | | | | * *Fungsi Floor,* * *Fungsi Ceiling*   *Fungsi Bulat* | | | | | | | | | |  | | | | | *Tutorial menggambar fungsi Floor*  *Tutorial contoh penerapan fungsi floor*  *Tutorial menggambar Fungsi ceiling* | | | | | | | | | | | | | [*https://www.youtube.com/watch?v=UQ3a2QH\_-GU*](https://www.youtube.com/watch?v=UQ3a2QH_-GU)  [*https://www.youtube.com/watch?v=WCGqbPyYi5A*](https://www.youtube.com/watch?v=WCGqbPyYi5A)  *https://www.youtube.com/watch?v=AT57VeoA-FM* | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | *On-line* | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri (self learning and assessment-Quiz/forum)* * *Tugas terstruktur* | | | | | | | | | | | | | | | | | | * *Pemaparan singkat, diskusi kelompok.dan presentasi mahasiswa (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | *On-line* | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *3 x 60 menit belajar mandiri;*  *3x 60 menit tugas terstruktur* | | | | | | | | | | | | | | | | | | *3 x 50 menit (Aktivitas Kelas)* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | *Metode* | | | | | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | *Bobot Nilai* | | | | | | |
| *On-line* | | | | | | | *F2F* | | | | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | |  | | | | | | |
| *Assignment dan feedback*  *Quiz*  *Forum* | | | | | | | * *Observation (Q/A)* * *Presentasi* | | | | | | | | | | | | *Rubrik holistic*  *Soal uraian (Format Online)*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | |  | | | | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | *On-line* | | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Berlatih menyelesaikan latihan soal penerapan Fungsi Tangga* | | | | | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | *On-line* | | | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | Aktivitas On-line | | | | | | | | | | | | | | | | | | | Aktivitas Kelas | | | | | | | | | | | | | | | | | | | | | |
| Karika Sari | | | | | | | | | | | | | | | | | | | Kartika Sari | | | | | | | | | | | | | | | | | | | | | |
| **Minggu ke: XVI Summative Test (UAS)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I Made Supartha Utama | | |
| Kemampuan Akhir Mahasiswa | | | | *Mampu menjawab/menjelaskan pertanyaan tertulis dari fasilitator* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kriteria/Indikator | | | | *Mampu menjawab/menjelaskan pertanyaan tertulis dari fasilitator* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bahan Kajian | | | | *Seluruh bahan kajian yang diberikan sebelumnya (Minggu IX-XV)* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bentuk dan Metode Pembelajaran | | | | *Belajar mandiri dan Evaluasi pembelajaran* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Beban Waktu Pembelajaran | | | | *On -line* | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas/Praktikum)* | | | | | | | | | | | | | | | | | | | | | |
| *6x 60 menit belajar mandiri* | | | | | | | | | | | | | | | | | *3 x 50 menit summative test* | | | | | | | | | | | | | | | | | | | | | |
| Assesment Pembelajaran | | | | *metode* | | | | | | | | | | | | | | | | | *Instrumen* | | | | | | | | | | | | | | | | | *Bobot Nilai* | | | | |
| *On-line* | | | | | *F2F* | | | | | | | | | | | | *On-line* | | | | | | | | | | | | | *F2F* | | |  | | | | | |
| *Quiz*  *Forum* | | | | | * *Observation (Q/A)* * *Sumative test* | | | | | | | | | | | | *Rubrik holistic*  *Forum (Format Online)* | | | | | | | | | | | | | *Rubrik Holistik* | | |  | | | | | |
| Pengalaaman Belajar / Aktivitas Mahasiswa | | | | *On-line* | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| * *Belajar mandiri* * *Mengerjakan Quiz dan Forum* | | | | | | | | | | | | | | | | | * *Belajar berkelompok dan berdiskusi (pengembangan inter-personal skills)* * *Mengerjakan test sumative* | | | | | | | | | | | | | | | | | | | | | |
| Media Pembelajaran | | | | *On-line* | | | | | | | | | | | | | | | | | *F2F (aktivitas kelas)* | | | | | | | | | | | | | | | | | | | | | |
| *On-line: perangkat computer/gadget dan akses internet* | | | | | | | | | | | | | | | | | *Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis* | | | | | | | | | | | | | | | | | | | | | |
| Fasilitator | | | | Aktivitas On-line | | | | | | | | | | | | | | | | | Aktivitas Kelas/Praktikum | | | | | | | | | | | | | | | | | | | | | |
|  | | | | Kartika Sari | | | | | | | | | | | | | | | | | Kartika Sari | | | | | | | | | | | | | | | | | | | | | |

**8. Daftar Pustaka**

# Hand Book:

# Santos, David A. 2007. *Number Theory for Mathematical Contests*. Free Software Foundation, Inc.

**Buku Teks dan Artikel:**

1. Andreescu, Titu and Andrica, Dorin. 2002. *An Introduction to Diophantine Equations*. Cil Publishing House, Romania.
2. Budhi, Wono Setya. 2005. *Langkah Awal Menuju ke Olimpiade Matematika*. Edisi 1. CV Ricardo, Jakarta Selatan.
3. Eynden, Charles Vanden. 2001. *Elementary Number Theory*. Second Edition. McGraw-Hill Companies, Inc, New York.
4. Herman, Jiri, Kucera, Radan and Simsa, Jaromir. 200. *Equations and Inequalities, Elementary Problems and Theorems in Algebra and Number Theory*. Translated by Karl Dilcher. Springer – Verlag New York, Inc.
5. Santos, David A. 2008. *Junior Problem Seminar*. Free Software Foundation, Inc.
6. Stark, Harold M. 1998. *An Introduction to Number Theory*. MIT Press, London.
7. Zawaira, Alexander and Hitchcock, Gavin. 2009. A Primer for Mathematics Competitions. Oxford University Press, Inc, New York.

# Video Movie:

Simple direct proof example[*https://www.youtube.com/watch?v=v-Vbw0xONuQ*](https://www.youtube.com/watch?v=v-Vbw0xONuQ)

Proof by Contradiction (Method and First Example) [*https://www.youtube.com/watch?v=huGWXh4l1M0*](https://www.youtube.com/watch?v=huGWXh4l1M0)

*Proof by Mathematical Induction:* [*https://www.youtube.com/watch?v=dMn5w4\_ztSw*](https://www.youtube.com/watch?v=dMn5w4_ztSw)

*To Identity Properties of Integer:* [*https://www.youtube.com/watch?v=OUnrhnSwG3k*](https://www.youtube.com/watch?v=OUnrhnSwG3k)

*The Magic of Fibonacci Number:* [*https://www.youtube.com/watch?v=SjSHVDfXHQ4*](https://www.youtube.com/watch?v=SjSHVDfXHQ4)

*Decoding the Secret Pattern of Nature ( Fibonacci Sequence):* [*https://www.youtube.com/watch?v=lXyCRP871VI*](https://www.youtube.com/watch?v=lXyCRP871VI)

*Integer Divisibility :* [*https://www.youtube.com/watch?v=dIfpZzX7bKo*](https://www.youtube.com/watch?v=dIfpZzX7bKo)

*The Division Algorithm:* [*https://www.youtube.com/watch?v=XHjSy\_MT7u0*](https://www.youtube.com/watch?v=XHjSy_MT7u0)

*Modular aritmatic:* [*https://www.youtube.com/watch?v=2tpSU7BJFMI*](https://www.youtube.com/watch?v=2tpSU7BJFMI)

*The Fundamental Theorem of Arithmatic:* [*https://www.youtube.com/watch?v=8CluknrLeys*](https://www.youtube.com/watch?v=8CluknrLeys)

*The Euclidean Algorithm:* [*https://www.youtube.com/watch?v=p5gn2hj51hs*](https://www.youtube.com/watch?v=p5gn2hj51hs)

*Using euclidean algorithm to write gcd as linear combination :* [*https://www.youtube.com/watch?v=qym5D5bhoQs*](https://www.youtube.com/watch?v=qym5D5bhoQs)

*Linear Diophantine Equation :* [*https://www.youtube.com/watch?v=uTFuHRK5Pmk*](https://www.youtube.com/watch?v=uTFuHRK5Pmk)

*Solve a linear congruence with common Factor :* [*https://www.youtube.com/watch?v=R9uOG42mfNY*](https://www.youtube.com/watch?v=R9uOG42mfNY)

**Diophantine Equation trick of proving no solutions exist for an diophantine equation:**

[*https://www.youtube.com/watch?v=BVm1Xvv\_Zig*](https://www.youtube.com/watch?v=BVm1Xvv_Zig)

*The Chinesse Remainder Theorem-an Example:* [*https://www.youtube.com/watch?v=pIPcxz3K1eQ*](https://www.youtube.com/watch?v=pIPcxz3K1eQ)

*Fermat Little Theorem:* [*https://www.youtube.com/watch?v=7C0ZMLdzDAo*](https://www.youtube.com/watch?v=7C0ZMLdzDAo)

*Appliying Fermat Little Theorem:* [*https://www.youtube.com/watch?v=W6tKAAyTczw*](https://www.youtube.com/watch?v=W6tKAAyTczw)

*Wilson Theorem fo finding out remainder :* [*https://www.youtube.com/watch?v=Jl3wSX0kMCE*](https://www.youtube.com/watch?v=Jl3wSX0kMCE)

*Wilson Theorem Solved Example:* [*https://www.youtube.com/watch?v=IW0bco1a788*](https://www.youtube.com/watch?v=IW0bco1a788)

*Euler’s Theorem made easy:* [*https://www.youtube.com/watch?v=FHkS3ydTM3M*](https://www.youtube.com/watch?v=FHkS3ydTM3M)

*Graphing the Floor Function:* [*https://www.youtube.com/watch?v=UQ3a2QH\_-GU*](https://www.youtube.com/watch?v=UQ3a2QH_-GU)

Floor Function- An Example : [*https://www.youtube.com/watch?v=WCGqbPyYi5A*](https://www.youtube.com/watch?v=WCGqbPyYi5A)

Ceiling Function : [*https://www.youtube.com/watch?v=AT57VeoA-FM*](https://www.youtube.com/watch?v=AT57VeoA-FM)

# Penilaian

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Formative Assessment | | |  | Proportion of Score |
|  | Tugas Kelompok | | : | 15% |
|  | Tugas Individu | | : | 15% |
|  | Tugas Terstruktur | | : | 15% |
|  | Presentasi | | : | 10% |
|  | Forum | |  | 10% |
| Summative Assessment | | |  |  |
|  | weekly Quiz | | : | 15% |
|  | Middle Semester Test | | : | 10% |
|  | End Semester test | | : | 10% |
| 100% | | | | |
| Grading Scale | | | | |
|  | 80-100 | A |  | |
|  | 70- <80 | B + |  | |
|  | 65-<70 | B |  | |
|  | 60-<65 | C + |  | |
|  | 55-<60 | C |  | |
|  | 45-<55 | D |  | |
|  | <45 | E |  | |

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| Disahkan olehKetua Program Studi(Desak Pt Eka Nilakusmawati, S.Si., M.Sc.)NIP. 19710611 199702 2 001 | |

# discrete mathematic - direct indirect proof: https://www.youtube.com/watch?v=s4X4xlVCeHQ